CITATION ANALYSIS OF M.L.I.Sc. DISSERTATIONS SUBMITTED IN THE DEPARTMENT OF LIBRARY AND INFORMATION SCIENCE, AMU, ALIGARH (2010-2011)

Dissertation

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Dedicated
To My
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Certificate

This is to certify that **Miss. Ariba Fatima** has completed her dissertation entitled **"Citation Analysis of M.L.I.Sc. Dissertations submitted in the Department of Library and Information Science, AMU, Aligarh (2010-2011)"** in partial fulfillment of the requirements for the degree of Master of Library and Information Science 2011-2012. She has conducted the work under my supervision and guidance.

I deem it fit for submission.

Sudharma

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Acknowledgement

"In the name of ALLAH the most Beneficent and Merciful"

*"All praise to Almighty **ALLAH**. The creator, cherisher and sustainer of the world. He created man and taught him that which he knew not (Al-Quran)". First and foremost, I would like to place on record my everlasting gratitude to Almighty God, who provided me all the necessary strength and guidance for timely completion of this dissertation.*

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Ariba Fatima

ARIBA FATIMA

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CHAPTER -1

INTRODUCTION

Aligarh' Muslim University (AMU) is a Residential Academic Institution located in the city of Aligarh, Uttar Pradesh, India. It was established in 1875 by Sir Syed Ahmed Khan and in 1920 it was granted a status of Central University by an Act of Indian Parliament. It is one of the premier central universities in India.

Aligarh is situated at a distance of 130 km, South-East of Delhi on Delhi-Kolkata Railway and Grand Trunk Road. Modeled on the University of Cambridge, it was among the first institutions of higher learning set up during the British Raj. Originally it was Mohammedan Anglo-Oriental College, which was founded by a great Muslim social reformer Sir Syed Ahmed Khan. Many prominent Muslim leaders, and Urdu writers and scholars of the subcontinent have graduated from the University.

1. Educational Streams

Aligarh Muslim University offers more than 250 Courses in traditional and modern branch of Education. Sir Syed Ahmed Khan, a great social reformer of his age felt the need for modern education and started a school in 1875 which later became the Mohammedan Anglo Oriental College and finally Aligarh Muslim University in 1920. This is a premier Central University with several faculties and maintained

institutions and draws students from all comers of the world, especially Africa, West Asia and South East Asia. In some courses, seats are reserved for students from SAARC and Commonwealth countries. The University is open to all irrespective of caste, creed, religion or gender. It is ranked 8th best (2009 ranking) of all research universities in India by the Council of Scientific and Industrial Research (CSIR) of India.

The establishment of Mohammedan Anglo Oriental (MAO) College in 1875 marks one of the most important events in the educational and social history of modern India. Its establishment is considered as the first significant response of the Indian Muslims to the challenges of post -1857 era. It was an important catalyst in a process of social change among Muslims.

In 1920, an Act of Indian Legislative Council elevated the M.A.O. College to the status of a Central University. Since that time AMU has grown into a major Indian university. It presently covers a very wide spectrum of academic disciplines, having 88 departments, 5 institutions, 13 centre's. The University currently has about 28000 students on its rolls, most of whom stay in 16 halls of residences with 70 hostels. It employs about 1400 academic staff, and about 6000 non-teaching staff. The University has a campus spread over 467.6 hectares of land, students come to study at AMU every year.

2. Facilities

AMU provides all the basic facilities to its students like residential accommodation, guest house, health services, sports, and computer centre and hobby workshops. The University has a vast library as well. The Library complex comprises of a Central Library and more than 80 college/departmental libraries. These libraries cater to the academic needs of the students.

3. Faculties

- Agriculture Sciences
- Arts
- Commerce
- Engineering & Technology
- Law
- Life Sciences
- Management Studies & Research
- Medicine
- Science
- Theology
- Unani Medicine
- Social Science

The Social Science faculty has many departments such as Economics, Education, History, Islamic Studies, Political Science, Sociology, Human Rights, Psychology, Library and Information Science, etc.

4. DEPARTMENT OF LIBRARY AND INFORMATION SCIENCE: A BRIEF OVERVIEW

The foundation of the department of library science was laid way back in 1950-51 with the introduction of 'Certificate course in Library Science' by the then university Librarian, Late Prof. S. Bashiruddin. The course proved so popular that after a few years, the university decided to run two courses a year. Encouraged by the success of the certificate course, Late Prof. S. Bashiruddin introduced 'Bachelor of Library Science' in 1958-59 with full time lectures for the first time in the country. The certificate course was discontinued in 1968-69 subsequently (Master of Library Science was introduced in 1970-71). Another pioneering step taken by the Department in the year 1986-87 was the introduction of Library Science as a Subsidiary subject in B.A. level in the faculties of Arts and Social Sciences and now from the year of 2005 it is introduced in women's college.

Realizing the need and importance of research in the Subject, the Department Started M.Phil/Ph.D. programme since 1990-91.

In the line with the UGC'S model curriculum (2001), the syllabi of the courses offered by the department have been thoroughly revised and

introduced from the session 2003-2004. A special feature of the revised syllabi is the emphasis on information technology and hands-on-training on a number of library automation software packages namely Alice for Windows. Libsys, SOUL, VTLS and WINISIS.

A well-equipped computer lab supports the revised syllabi with round the clock Internet Facility available through Campus network. The Seminar of the department has been developed into a 'Fully Automated Library', on 7th September 2004 with issue and return of Books through Barcode, OPAC, Access to E-journals and CD workstation.

5. DISSERTATIONS

The Doctoral degree is awarded upon success-full compilation of supervised research and the formal presentation of the result of research is a dissertation each decantation deals with some aspect of a subject not previously treated. Doctoral dissertations are therefore an important source of original information. Before embarking on research for doctoral dissertation, the researcher invariably conducts a comprehension literature sunray. This is done, not only to ascertain the present state of knowledge in the field of endearing but also make sure that no one else has made a prior investigation on the proposed research topic. The resulted of this comprehensive literature survey are presented as a separate chapter in. A dissertation in the form of a state of the art review accompanied by the exhaustive bibliography.

Thus, dissertation can also be used as a secondary source for locating reviews and bibliographies. As mentioned earlier M.Lib. Course was introduced in the department in 1972 when there was only 5 seats for the candidates, selected on the basis of competitive test followed by interview.

The number of seats continued to increase as the course become more and more popular. At present there are 25 seats in the course. For the last two years or so, the pass outs of this course are getting 100% placement in leading institution in the country including IT sector.

5.1 Dissertation in M.L.I.Sc. Course

Dissertation is an essential part of M.L.I.Sc. Syllabi that comprises of a complete paper carrying 100 marks. In non-semester course the student of M.L.I.Sc. used to work for their dissertation during the whole academic year. However, by the implementation of semester system, the compulsory papers of dissertation have been assigned to II semester. It is important to note that the practice of allocation of topic starts in the beginning of the Ist semester so that the students and the supervisor get enough time to work upon the project.

The selection of the topic is itself a problem because in 1972 when M.L.I.Sc. was introduced in A.M.U., varied topics were assigned by the supervisors to work upon. It is therefore imperative to avoid duplication of efforts. By now, to the best of knowledge and belief both teachers and

the students of the department have been using manually prepared list of about 400 dissertations in order to select a topic of dissertation.

Many studies have been conducted using different study methods such as:

- Bibliography Compilation
- Bibliometric study
- Survey method
- Case study
- Comparative study
- Citation Analysis
- Webometric study

Until 1995 it was found that only bibliography was used to compile dissertations. However, a change in the trend was brought out in 1996 when for the first time bibliometric study was conducted.

Studies conducted using different methods of studies include:

Period	Type of dissertations
1972-1995	Compilation of Bibliographies.
1995-2000	Compilation of Bibliographies, Bibliometric studies. Survey methods, Case studies, Comparative studies.
2001-2005	Compilation of Bibliographies, Bibliometric studies, Case studies, Survey method, Comparative studies and Webometric study.

Source (List of dissertations submitted in the department)

REFERENCES

1. Annual Report. 2003-2004, Aligarh Muslim University, 8-10.

2. http://www.amu.ac.in

3. http:// en.wikipedia.org/wiki/aligarh_Muslim_University

Chapter-2

Citation Analysis

CHAPTER – 2

CITATION ANALYSIS

2. INTRODUCTION

The exponential growth of literature and rapid development of libraries generated several evolutionary studies about the effectiveness and efficiency of information services. These studies led to the identification and application of appropriate quantitative measuring techniques known as "bibliometrics".

2.1 BIBLIOMETRICS: MEANING AND DEFINITION

Bibliometrics is used to process and study quantitative data from scientific publications. The fundamental objective of bibliometrics is the study of scientific documents, as well as investigation of the structure and dynamics of the groups that produces and uses these scientific documents and information. The word "bibliometrics" first appeared in 1969 in Alan Pritchard's article "Statistical Bibliography or Bibliometrics" in the December issue of the Journal of Documentation. His article was the result of his judgement that the expression "Statistical Bibliography" should be replaced with a better term. He stated that "The term statistical bibliography is not very descriptive and can be confused with statistics itself or bibliography on statistics". As a result of promoting his friend, M.G.Kendall, Pritchard suggested that the word

"Bibliometrics, i.e., the application of mathematical and statistical methods to books and other media of communication can be a substitute for "Statistical Bibliography".

So many interpretation of the term has been put forward by many authors over the years. Some of these explanations are discussed as follows.

2.2 Alan Pritchard (1968)[1]

"Application of mathematical methods to books and other media of communication".

2.3 D.T.Hawkins (1977)[2]

"The quantitative analysis of the bibliographic features of a body of literature ".

2.4 British Standard Institute (BSI)[3]

"The study of the use of documents and patterns of publication in which mathematical and statistical methods have been applied".

2.5 CITATION ANALYSIS

Citation analysis is a statistical method used for arranging the cited material in some their relative importance. The type of arrangement may be linear, as in the ranked list of the cited periodicals, or it may be multidimensional, as in the case of citation network based on the data derived from the science citation index. The arrangement may also be

simple distribution of cited documents on the basis of form quality and age. The purposes of these arrangements are to study the referencing pattern and the literature used find in given subject. Citation analysis is the examination of the frequency, patterns and graphs of citations in articles and books. It uses citations in scholarly works to establish links to other works or other researchers. It is one of the most widely used methods of bibliometrics.

Citation analysis is an established research tool used by librarians, teachers and information scientists to indicate the relationship that exists between the cited and citing document. In fact it is the outcome of the realization of the rate of growth and the fragmentation of scientific literature and the rising cost of journals. The technique of citation analysis involves the process of collection, counting and analysis of citations given in various types of literature and the subsequent identification of significant sources, journals, individuals, institutions and other aggregates of scientific activities. It is also used as a measuring tool in the determination of communication links among scientists.

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[1] Pritchar, Allan. "Statistical bibliography or bibnliometrics." Journal of Documentation 25 (1969): 348-349.

[2] Hawkins, D.T. "Unconventional uses of on line information retrieval system: On-Line bibliometric studies." Journal of American Society for Information Science 28. 1 (1977): 13-18.

[3] British standards Institute. British standards of Documentation Terms. London: BSI, 1978.

A scientific paper does not standalone but it is embedded in the literature of the subject. The native of this embedding is specified by the use of foot notes and references lists. The facts in the author's mind is a relationship between a part or the whole of .the cited document and a part or the whole of the citing document, citation analysis is that area of bibliometrics which deals with the study of these relationships. The basic tool for this kind of study is a citation which is an ordered list o cited documents.

Thus, citations are bibliographical references which are usually appended with every research communication. When a document refers to another document, the later is called the cited document, and the former the citing document. Brief description about the cited document in known as citation which includes name of the author, document, pages, year of publication, places, websites etc. the pattern; of Citations are also differs from publication to publication. The Citations are also called references, readings and they may appear as end note as well as footnotes.

Citations Analysis essentially involves counting the number of time a scientific paper or Scientist or journals or websites is cited and it works on the assumption that influential scientists and important works will be cited more frequently than other. Citations Analysis has conquered the world of Science policy analysis. Aggregate of Citations are commonly used in evolution studies as indicators for the "impact" of publications, as one of the measures of the 'quality' of research groups or even of

individual researchers. Co-Citations maps of scientific and also increasingly Citations patterns among journals are used to describe the development of disciplines and specialties, and to identify engaging areas of 'Scientific inquiry'.

According to E.C. White (1985) Citations perform the following functions: -

- Recognizing Pioneers ;
- Crediting related work;
- Identifying methodology;
- Substantiating claims;
- Providing leads to poorly indexed works;
- Authenticating data, and ;
- Providing background reading.

The foundation of analysis, therefore, rest upon a basic assumption that the practice of quoting an authority in a scientific communication make it authentic and meaningful.

2.6 DEFINITIONS OF CITATION ANALYSIS

According to Garfield "Citation analysis is a bibliographic method that has been found to be particularly suited for myriad investigations of trends and characteristics of journals literature".

According to Osareh "When one author cites another author, a relationship is established. Citation analysis uses citation in scholarly works to establish links. Many different links can be ascertained, such as links between authors, between scholarly works, between journals, between fields, or even between countries".

According to Rubin, "Richard E.'Citation analysis is the examination of the frequency and patterns of citations in articles and books".

According to Buttlar "Citation analysis is an excellent unobtrusive method to determine which resources doctoral students are using".

According to Martyn "Citation analysis of the citation or reference which form part of scholarly apparatus of primary communication.

According to Baughman "It is a systematic enquiry into the structural properties of that subject".

2.7 HISTORY OF CITATION ANALYSIS

The first practical application of this concept was Shepard's citation, a legal reference tool that has been in used since 1873. To try a case under Store Decisis, a lawyer must base argument on previous decisions, however, the lawyers make sure that the decision have not been over ruled, reversed or limited in some way. Shepard's Citation enables the lawyer to do this with a minimum of trouble. Taking advantage of coding

system; Frank Shepard devised a list which every importance in which reported decision is cited m a subsequent case. The listing also shows what Status and journal cite the original decision. Using Shepard's citation, a lawyer must first locate a previous decision relating to his cement case.

From the 1920's library literature has recorded a number of citation studies. But the term 'Citation Analysis' never appeared till 1956. Many of them attempted to rank the importance of journals on the basis of an average number of references to journals cited in research papers. The first user-study of any significance based on a more systematic citation count was by Gross and Gross in 1927.

The word "Bibliometric" or "Citation analysis" was first coined by Allen Pritchard in 1969 to mean an application of mathematical and statistical method to books and other media process of written communication and of the nature and course of a discipline. The earliest attempt at using statistical methods for studying subject scattering was made in 1896 who applied this method to ascertain subject scattering of articles covered under some national and international bibliographies. Cole and Eales (1917) Gross and Gross in 1927 used citation count to rank the periodicals in chemistry which was regarded as the first users study of any significance based on a more systematic citation count that later became that basis and a methodological direction to the Bradford's law of

scattering S.R. Ranganathan coined the term 'librametry' for quantitative studies and analysis of library activities.

Citations have their own origins in the referencing practices of researchers and writers. The concept of identification to the source of an idea or quotation developed during the renaissance after the invention of painting. In England, the copyright Act of 1709 provided protection of literary property and established a precedent for the enactment of copyright laws in all countries, culminating in 1886 in the development of the principles of international copyright. The precise origin of the use of footnotes or references is obscure. The earliest example provided in the Oxford English Dictionary is William Savage's A Dictionary of the Art of Printing (1841), containing eighty-eighty Bottom note also tended as footnotes".

He this by consulting a digest, index or encyclopedia which will provide him with the case members of any given decision. The lawyers then look up the case number in Shepherd citations and find all subsequent citing cases. From the information, he can determine whether the original decision was affirmed or modified in any way.

1. Welch Medical Library indexing project

In 1952, Dr. Chauncey Leake was chairman of committee of consultants for the study of indexes to medical literature. This committee was

supervising the John Hopkins Welch Medical Library Indexing project which was sponsored by the Armed Forces Medical Library.

2. Eugene Garfield

Statement into a consistent format that would be useful as an Eugene Garfield one of the Welch project investors realizes that nearly every sentence in a review article is supported by la citation to a previous work. Thus, a review article could really be considered as a series of indexing statement. The problem then becomes one of transforming these indexes. Garfield identified the reason tor citing a document, these are as follows:

- paying homage to pioneers
- giving Credit for related work
- Identifying methodology, equipment's, etc.
- providing background reading
- correcting one's own work
- correcting the work of others
- criticizing previous work
- subtending claims
- altering to forthcoming work
- providing leads to poorly disseminated, poorly indexed, or incited work.
- identifying original publications or other work describing an eponymic concepts

- disclaiming work or ideas of others
- disputing priority claims of others

2.8 CITATION INDEXES

Eugene Garfield was the first to realize the presence of a cognitive and moral connection between sources and their references. He showed the possibility of constructing an index on the basis of structured list of all references in a given collection of articles, where each cited references is followed by all the citing documents.

All the documents are likely to contain a list of references or bibliographic citations. This is the way in which author shows the foundation on which the document is prepared. Hence there is a link between the document and items cited in its list of reference. This can be inverted and say that there is ,a link between the original item and the documents citing it or under one cited document, all the citing documents that have cited it are listed. For example, if three papers A, B and C have cited X, then the citation index will list all the citing documents A, B and C under the cited document 'X'. By scanning very large number of documents by means of computer, the citation index can established a much large number of such links between scientific articles and their citation. There are following types of citation index:

- Genetic Citation Index

- Science Citation Index
- Social Science Citation Index
- Arts and Humanities Citation Index
- Derweht Innovation Index

1. Genetic Citation Indexing

In 1961, the National Institute of Health Initiated a cooperative programme with Garfield's Institute for Scientific Information (ISI) to prepare a citation index for the field of Genetics.

Garfield soon recognized, however that defining the genetics literature to be covered by a citation index would be quite difficult. Fine judgments would be required as to what was or was not genetics literature. As Garfield's suggestion, it was decided to undertake a comprehensive interdisciplinary approach to preparing a citation index and then extract a genetics citations index from that base of information.

2. Science Citation Index

Taking the due from the legal literature and the usefulness of the Sheppard Index, Eugene Garfield has been advocating, since 1950s, for such an index in the field of science and technology. He made some experimental studies and in 1961 brought out an experimental science citation index. Since 1964 Garfield's institution, the Institute for Scientific Information at Philadelphia, has been regularly bringing out the

Science Citation Index (SCI). It started, in 1964, with coverage of 700 periodicals and all US patients. In 1969 the number of source journals crossed the 2000 marks. Initially it had only two parts; citation index, and the source index. Later on, since the year 1966, a third part called permuterm index was also introduced. Today the web based version of that index covers 5,000 journals across more than 150 scientific disciplines. The science citation index expanded format, available through the **Web of Science** and the online version, **Sci Search,** cover more than 5, 8000 journals.

3. Social Science Citation Index

A great landmark took place in 1972 when ISl started publishing social science citation index, which provides access to current and retrospective bibliographic information author abstract and cited references found in over 1700 of the World's leading scholarly social science journals covering more than 50 disciplines.

4. Arts and Humanities Citation Index

The ISI Arts Humanities citation index provides access to current and retrospective bibliographic information and cited references found in over 1,120 of the World's leading Arta and Humanities journals.

The Derwent innovation Index, available through ISI web of Science Interface, is a web accessible product that merges the Derwent World patent index with the Derwent patent Citation Index. Updated weekly it

covers over 10 million basic invention and 18 million patents in all form over 40 patent issuing authorities.

2.9 CONCEPT OF CITATION ANALYSIS

The concept of citation analysis had been existing under different names. The word bibliometrics the other name of citation analysis was first coined by Allen Prichard in 1969 to mean. "An application of mathematical and statistical method to books and other media process of written citation and of the nature and course of a discipline".

Cole and Eales[5] through their work "The history of comparative anatomy inl917 has used the expression 'statistical analysis' has been used, studied the contribution in the field of anatomy by counting the number of publication produced by different countries, increasing a period from 1543 to 60 which was regarded as the first counting technique in evaluating the international scientific activities.

P.L.K Gross and E.M. Gross[10] in 1927 used citation count to rank the periodicals in chemistry which was regarded as the first user study of any significance based on a more systematic citation count that later became that basic and methodological direction to the Bradford's law of scattering.

In 1948, S.R. Ranganathan[18] coined the term "Libfametrics to connote. The use of statistics to evaluate an existing or proposed library service and resource.

2.10 APPLICATIONS OF CITATION ANALYSIS

Citation analysis can be applied for various studies

(a) Library and information oriented studies, instances of which are visible in : rates of use of library materials and rank ordered of listing of journals.

(b) Science oriented studies as seen in network determination through co-citation and clustering:

(c) Modeling of the historical development of science and technology.

(d) Management oriented studies; this can be visualized in evaluation of productivity studies - in terms of productivity studies in terms of citation analysis.

(e) Information search and retrieval.

2.11 PURPOSE OF CITATION ANALYSIS

Citations are used to access the value, quality, impact, penetration, and originality, visibility of individual and corporate performance within and across disciplines. Weinstocks has identified major motivations of authors behind using references, as listed below:

1. Paying homage to pioneers;
2. Giving credit for related work;
3. Identifying methodology, equipment, etc.;
4. Providing background reading;
5. Correcting one's own work;

6. Correcting the work of others;
7. Criticizing the work of others;
8. Alerting researchers to forthcoming work;
9. Substantiating claims;
10. Providing leads to poorly disseminated, poorly indexed or uncited work;
11. Authenticating data and classes of fact, physical constants, etc;
12. Disclaiming work or ideas of others;
13. Disputing priority claims of others;
14. Identifying original publications in which an idea or concept wasdiscussed;
15. Identifying the original publication describing an eponymic concept or term.

2.12 TYPES OF CITATION ANALYSIS STUDIES

There are a number of different approaches to citation analysis. Basic concepts of citation analysis that provide for study and research include:

1. Direct Citation: which establishes the relationship between document and the researchers who use them Direct citation is a technique that determines how many citations a given document, author, journal etc, has received over a period of time. The rationale for this is that citation are objective indicators of use and therefore an article, author journal that

is frequently cited is more useful or productive, as the case may be, than one that is less frequently cited.

2. **Bibliographic Coupling** : The relation of two documents by virtue of their joint descent from the third. The concept of bibliographic coupling was first elaborated, tested and coined by M.M. Kessler. It is a number of common references cited in two documents that indicates the degree of similarity of contents of the citing papers. Two source documents containing a large number of common references are said to have a high coupling strength and are likely to be on the same topic. It links two papers that cite the same article, so that if papers. A and B both cite paper C, they may be said to be related, even though they don't directly cite each other. The more papers they both cite, the stronger their relationship is. It is observed that the concept of relationship has certain drawbacks and not seem to be a valid unit of measurement because of two papers are citing a third paper, they may or may not be citing an identical piece of information of third paper being cited. The fact that two papers have a reference in common is no guarantee that both papers are referring to the same piece of information. So, it is merely an indication of the existence of probability of relation between two documents.

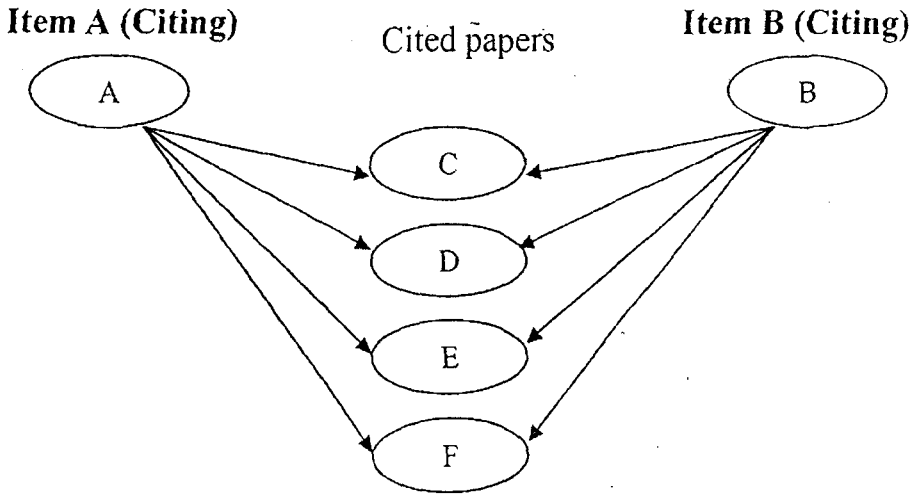

Fig. 1

Bibliographic Coupling

3. **Co-citation coupling:** The concept of co-citation was for the first developed by H. Small who proposed a new method of analyzing citations to generate clusters of related papers. He describes or papers are cited together in subsequent literature determine the co-citation strength of two cited documents/ papers". He also stated that cited documents are linked together through the process of co-citation, and 'this process is similar to the subject similarity measures of the co-occurrence of words between two documents.

A. E. Cawkell defines co-citation as "subject similarity indicator, and demonstrates co-citation bibliographic coupling clearly through a citation matrix."

T. Bellarado defines co-citation as "a process whereby an author cites to earlier documents in a new work".

If papers A and B are both cited by paper C, they way be said to be related to one another, even though they don't directly cite each others. If paper A and B are both cited by many other papers, they have a stronger relationship. The more papers they are cited by the stronger their - relationship is co-citation is dynamic measure in that co-citation strength of cited papers can be studied over a period of time as they continue to be cited together in subsequent literature.

One of disadvantage of co-citation techniques is that, it requires comprehensive citation data.

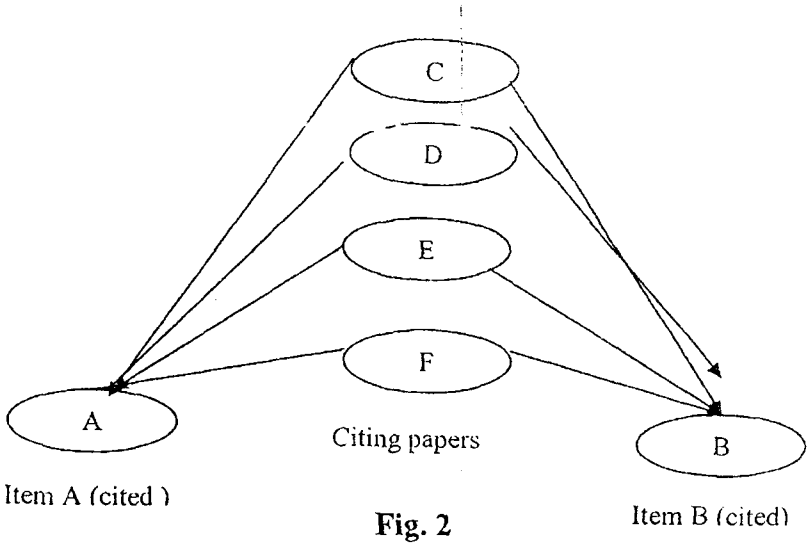

Fig. 2

Co-citation coupling

Garfield explains that the strength of co-citation can be calculated using the following formula.

$$S = \frac{Co-citation \quad of \quad A+B}{(total\ citation \quad of \quad A+B) - (Co-citation \quad of \quad A+B)}$$

2.13 TECHNIQUES USED IN CITATION ANALYSIS

Citation analysis itself is a bibliometric technique in which works cited in publications are examined to determine patterns of scholarly communication. A lot of survey and studies have been done in the area of citation analysis. The techniques used in analysis of citations mostly are as follows :

1. Obsolescence

The term obsolescence also means no life or half-life documents, or no longer in use. This technique of obsolescence has been specifically used in confirming or rejecting the idea that document use or value declines with its age. That is, a document may become of least use after some time of their appearance for reasons, i.e. the information is valid, but incorporated in later works; the information is valid, but superseded by later work; the information is valid but is in a field of declining interest; the information is no longer considered valid.

2. Clustering

This is a technique, which with the help of citation analysis, tries to link different groups of documents with similar citations. Clusters are formed when an article (a member of the cluster) has colupling link with at least another member. No member of one cluster would he link with a member of another separate cluster.

3. Half life

The time during which one half of all the currently active literature was published. This literature becomes 'unused', but not 'unusable'. Unlike radioactive decay it does not become disintegrated but obsolescent.

4. Cited half-life :Journal

The number of journal publication years going back from the current year which accounts for 50% of the total citations received by the cited journal in the current year.

5. Scattering (Bibliographic)

The name scattering or more specifically bibliographic scattering is used to devote the phenomenon of homogeneous clustering of bibliographic items e.g. articles, citations, word, frequencies etc over their sources e.g. journals, cited articles etc. Major bibliographic scattering phenomena are the journal scattering and the citation scattering.

6. Citation Chasing

A legitimate research technique in which the bibliographies of works already located in a literature search are examined ("mined") for additional sources containing further information on the topic. The process can be facilitated by using a citation index.

7. Impact Factor

Impact factor (IF) is the average citation rate of a journals article. It is basically a ratio between the citation rate of the journal and its citation

potential. Citation rate is defined as the number of time cited, where as citation potential is define as the number of citable items published.

$$\text{Impact factor} = \frac{\text{The number of times a journal was cited}}{\text{(The number of citable items in the journal published)}}$$

Therefore IF= the number of times of journal was cited/the number of citable items in the journal published.

The impact factor reflects the impact of an average article published in the journal; it normalizes the number of citations, and it does not discriminate among journals.

8. Citation Index

Citation Index is an ordered list of cited articles each of which is accompanied by a list of citing articles. The cited articles is identified as a reference and the citing article as a source. The association of ideas existing between the cited and the citing articles in utilized in the preparation of the index. It may perhaps be said that cited articles are, ancestors and the citing articles are descendents and the descending relation of subject is reflected through the index.

Citation indexing is a relatively new method of organizing the contents of a collection of documents in a way that overcomes many of the shortcomings of the more traditional indexing method. The primary advantage of citation indexing is that it identifies relationships between

documents that are often over looked in a subject index. An important secondary advantage is that the compilation of citation indexes is especially well studied in the use of man machine indexing method that do not require indexers who are subject specialists. This helps to make citation current than most subject indexes. Furthermore citations which are bibliographic descriptions of document are not valuable to scientific and technological obsolescence as the terms used in subject indexes.

9. Immediacy Index

This is a method of showing how rapidly the materials published by a journal are picked up and used. It measures the extent to which articles make a quick impact on readers the timelines or currency of the journal. Historical journals would presumably have low immediacy indexes; cutting edge medical journals could have relatively high immediacy indexes. One would expect e-journals to have high immediacy indexes, since speed of publication is one of the most often cited advantages of e-journals. It is calculated by counting the numbers of citations received by articles in a journal during the year in which they were published.

Immediacy index for a journal=

$$\frac{\text{(Number of citations received in 1995)}}{\text{number of 1995 articles}}$$

2.14 NEED OF CITATION ANALYSIS

Knowledge is being unfolded every day. This situation of overwhelming mass of available information is denoted by "Information explosion". It is common knowledge that during the present generation more science related information has been produced than in the past. This is because of the specialization and diversification of knowledge, need of distinguishing oneself in academic circles and increasing number of printed or recorded information in various forms.

Cost is another factor of concern. According to a survey of expenditure carried by Roorkee University, the cost of journals doubles every fourth year. This has outstripped the purchasing capacity of libraries all over the world. It is said that every rich library like the library of congress of the USA, whose budget is in several crores of rupees, will not be able to procure each and every document that is being published from different parts of the world and in the different forms and languages. Therefore, to avoid difficulties created by the inflation on the one hand and the shrinking fund position on the other, a purposeful study of evaluating the types of literature and selecting periodicals according to their use value is of immediate interest and need. The universe of knowledge is multidimensional and every changing. Therefore, the evaluation of literature of a sample is essential and has been a practice of librarianship.

Citation analysis is helpful to the organization of knowledge with the discipline the journal deals.

- Disclaiming work or ideas of others.
- Disputing priority claims of others.
- Identifying original publications in which an idea or concept was discussed.
- Identifying the original publication describing an eponymic concept or term.

2.15 IMPORTANCE OF CITATION ANALYSIS

The primary function of citation is to provide a connection between two documents, one which cites and the other which is cited. Citation analysis is frequently practiced. It is largely used for putting things in order. The things ordered can be journals, articles, authors of articles in journals or organizations to which authors of journal articles are affiliated. The type of order can be linear, as is ranking, or multidimensional as in the generation of citation networks. Studies of obsolescence rates of journals, or documents may be considered to be special areas of ranking, over time. Whatever the type of analysis performed, the interpretation for the results depends upon the nature of relationship between the citing and cited documents.

Citation analysis is very often fruitfully applied to derive the following benefits:

(a) To lead the Reader to further studies in the field

This is perhaps the primary purpose of citations. Readers can verify the correctness of the information and thereby convince themselves.

(b) For the preparation of bibliographies

The first use of citation indexing was made in Shepherd's Citations published in 1873. This technique of citation indexing has been perfected by Eugene Garfield and others since the early 1960s. It is a fact that compilation of bibliographies in new fields is really difficult. In such circumstances, analysis of citations of articles may be the only way to gather information. The very fact that the citations have been verified, evaluated and recommended by authors who are experts in their own fields made there all the more acceptable for inclusion in a bibliography.

(c) To study the use pattern of different types of documents

Citations given may be of books, journal articles, reports, standards, theses/dissertations etc. The relative use of each of these types can be ascertained based on the frequency of citations. For example, various citation studies have shown that journal articles are the most preferred source consulted by scientists since they constitute about 70-80% of the total citations. Similarly citation practices among social scientists indicate that they give equal importance to books and journals.

(d) To find out the relative use of different languages

Since English has emerged as a world language, especially in science and technology, there is a predominance of English language publications in all branches. This can easily be understood from citation-analysis. In the mid-sixties, for instance, the share of English language papers in Mathematics and Chemistry was more than 50%. Russian occupied the second position with about 20% followed by German and French.

Citation practices have also shown that the relative amount of literature in different subjects produced by different countries changes with time. It has been observed that German has declined very much in the 20th century, especially in the field of Chemistry were publications in this language reigned supreme.

(e) To study the use of literature from different countries

From the citations, the country of their origin can be identified in all types of materials like journal articles, books, reports etc. In many subject areas. U.S. Publication is found to be used more heavily. In medicine, biochemistry, physiology and pharmacology, the leading role is played by U.S. journals. Journals of U.K. occupied the second position, but they come nowhere near their American counterparts in the frequency of use. Some of the user studies in India have shown that Indian publications are also equally cited in certain subjects.

(f) To study the scattering of subjects

Studies about the dispersion or scattering of subjects in different sources as evidenced by citation analysis have brought out interesting results. For example:

- Social science and arts subjects show a wider scatter of publication than science.
- Research publications in technology show a greater dispersion than those in science.
- A new branch of science, especially an interdisciplinary one, shows a greater dispersion than an older branch of science.
- There can be differences in scatter between sub-fields within a subject and also among major subjects.
- The rate of scatter within the same subject alters with time.

(g) To decide the obsolescence rate of documents in different subjects

Citations in subsequent literature and usage pattern in libraries are considered as two indicators of the obsolescence of literature. Analysis of citations by age of the cited document can show the useful life of a document. In order to measure the decay or obsolescence rate of documents, the concept of 'half life' has been borrowed from Nuclear Physics. The fast growing subjects would have lesser half-lives compared

to established disciplines. These time scales are highly useful in the planning of library holding.

(h) To determine the interdependence and lineage of subjects

The interdependence of basic and applied fields can be understood by citation studies. Establishment of this interdependence can be of use in the acquisition policy of special libraries or information centers. The analysis, of citations of the Annual Review of Medicine for the year 1965-69 by Sengupta, I.N. has established the contribution made by journals in the fields of biochemistry and physiology to the medical research. Further studies by' him have brought to light the mutual contribution of biochemistry, physiology and microbiology.

(i) To prepare ranked list of periodicals

Ranked list of periodicals can be prepared by two methods: By actual citation countering; and by counting the number of entries in indexing and abstracting periodicals.

In the first method, information is collected from the references cited in source articles. By studying the average number of citations, one can develop a list of cited journals in the ranked order.

In the second method, the number of items contributed by different periodicals during a specific period of time is calculated from die secondary source and the ranked list is prepared based on the productivity

of journals. Such ranked lists are very often used as guidelines in the acquisition of periodicals as other materials in the library.

(j) To study the rate of collaborative research

Collaborative research can be effectively measured from the number of authors in papers. Such studies can be conducted to understand global trends, national trends or trends in different subjects. Studies in this direction have indicated that collaboration varies from discipline to discipline, within the same discipline from time to time, and from country to country. However, the extent of collaboration may not be revealed from the citations.

(k) For the analysis of scientific journals

Citation analysis provides a number of interesting and useful insights into the networking of journals. These insights are develop from five different citation measure, which perfected by Institute for Scientific Information (1ST).

(i) Citation rate of a journal

This is the number of times a journal has been cited it can consist of all the references to the cited journal, counting even duplicate references from the same source article as a separate. It can also be calculated by counting only the number source of sources articles that cited the journal. A third method of calculation citation rate that is followed by ISI is by counting the number of references to the cited journal, but treating

duplicate references from the same source article as only a single citation links.

(ii) Self-cited rate

This, again, is a measurement of self-citation. It shows what percentage of citations received by a journal originated in articles published by the journal. These self-citation rates serve as indexes to newness, size and isolation of the intellectual universe in which a journals operates.

2.16 BENEFITS OF CITATION ANALYSIS

a) Citation analysis is used to study the citation links between scientific papers, technical notes and reviews, for example, it may be used by the periodicals librarian for study of the structure of literatures and to identify core journals.

b) It provides relevant measures of utility and a relationship of journals whose primary functions is to communicate research results.

c) It helps in identification of key documents and creation of core lists of journals.

d) It helps in clustering of documents according to common references and citations.

e) It provides study of the attributes of literature including growth rate, obsolescence and citation practices.

2.17 LIMITATIONS OR CITATION ANALYSIS

Generally, all studies using citation and co-citation analyses suffer from two major limitations; the assumptions which underline citation analyses, and the problem with the sources of citation data. A number of factors limit the importance of citation data.

i) Negative citation i.e. citing a paper just to repudiate it. The result is that the controversial papers will get more citations than really worthwhile papers.

ii) Too much of self citation and in house citation while papers are written by a single author, the elimination of self citation is easy but a further checking may be needed for multi-authored papers. The elimination of group self citation is the more difficult problem.

iii) Incomplete record of the workings of the information system.

iv) Lack of rationale behind citing to enable direct application of the data.

v) Some authors miss to cite, or ignore the debt of a citation and do not cite.

vi) Citing behavior is not uniform in all publications and subjects e.g. sciences, social science.

vii) Thus items, advertisements, letter statistical bulletins, etc. are never cited, indicating another characteristics bias in citing.

viii) The number of citations provided by each publication varies enormously, so it is difficult to estimate the total number of sources.

ix) Location and identifying a citation is not always straight forward.

x) Citations come in various forms and are described differently (reference, bibliography notes, and readings).

xi) Citations may be found in the text of the document at the foot of the relevant page, in a letter, accompanying or diagram or at the end of the article or document.

xii) Practice or citing only to get the favour of the powerful or to appease others.

xiii) Problem of multiple authorship: The citation indexes include only the first named authors of cited articles.

xiv) Problem of Homographs or Homonyms: to differentiate among many scientists with the same name and initials publishing in the field extra information such as institutional affiliation is needed otherwise citation could be incorrectly attributed to an author, particularly he/she has a common name, and even this problem is more difficult with Chinese or Japanese names than with English names.

xv) Problem of synonyms is also there. Until establishing a standard form for the author's name citation will be scattered. A woman's maiden and married names different treatment of foreign names and misspelling.

xvi) Citation data should not be too restricted in time, while there may be large variations in citation counts from one year to another.

2.18 CITATION ANALYSIS ON THE WEB

Data from citation analysis is also useful in assessing the impact or possible effects of publications existing in electronic formats (i.e. online or free journals cited more than others). Although citation analysis is nothing new, greater computing power is making it more useful and widespread. Google's page rank is based on the principle of citation analysis. Link popularity is not the only criterion that Google measures when rank the search results. The popularity of the referring pages is also a factor as of course is the contents of the actual page. Web pages that contain similar links and pages that are both linked to and from other pages have a greater chance of appearing together in Google's "Similar pages" feature. Also, page rank is not perfect, nor are Google's results. Yet Google ranking methods have proven to be reliable.

2.19 WEB APPLICATIONS OF CITATION ANALYSIS

Recently a new growth area in bibliometrics/citation analysis has been the emerging field of webometrics, or cybermetrics as it is often called.

Webometrics can be defined as using of bibliometric techniques in order to study the relationship of different sites on the World Wide Web. Such techniques may also be used to map out (called "Scientific mapping" in traditional bibliometric research) areas of the web that appear to be most useful or influential, based on the number of times they are hyperlinked to other websites.

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Chapter-3

Review of Related Literature

CHAPTER-3

REVIEW OF RELATED LITERATURE

A literature review discusses published information in a particular subject area. A literature review is a body of text that aims to review the critical points of available knowledge on a particular topic.

A good literature review is characterized by a logical flow of ideas, current and relevant references with consistent, appropriate referencing style, proper use of terminology, and an unbiased and comprehensive view of the previous research on the topic. A literature review can be just a simple summary of the sources. It might give a new interpretation of old material or combine new with old interpretations or it might trace the intellectual progression of the field, including major debates, and depending on the situation, the literature review may also evaluate the sources and advice the reader.

In the following pages review of related studies have been desired.

Kumar and Reddy (2012)[1] studied the Citations in Master's degree dissertations submitted to the Department of Library and Information Science, Sri Venkateswara University, Tirupathi during the period 2000 - 2007, were analysed for finding possible relationships between citing, citing articles and bibliographic forms. Frequency and percentage distributions (presented in charts, tables and graphs) and measures of central tendency were used to analyse data. Findings showed that journals

were the most utilized reference materials in the dissertations. Also, library science in general had the highest number of citations followed by library management and cataloguing. The lowest numbers of citations were from education, literature and social sciences respectively. The findings from this study could serve as a user study with implications for collection, development and user services designing in libraries.

Mirja, Valtari and Tanja (2009)[2] studied that the impact of university libraries was analyzed by investigating the availability of the references of dissertations in the university's own library. A special attention was given to the electronic availability of cited works. Citation analysis was used. Ten dissertations of economics and administration from two Finnish universities were analyzed. The dissertations were completed in 2005-2006.The comparison of the availability of references in two different universities, a large, multidisciplinary university and a small, specialized university, was carried out. The paper emphasizes that the impact of libraries can be demonstrated by presenting the visibility of their collections in dissertations. Because of the rapid change of information environment, the study considered the availability of electronic sources of dissertations. The interesting comparison between two different universities was carried out. The availability of the references of dissertations was good in both universities. A large part of references, especially journal articles, were already available electronically. The

university libraries have a significant role in contributing to the doctoral studies, because they offer the access to adequate information resources.

Olatokum and Makinde (2009)[3] studied the citations in master's degree dissertation submitted to the Department of Animal Science, University of Ibadan, Nigeria during the period 2000-2007 were analysed for finding possible relationships between citing, cited articles and authors. Frequently and percentage distributions (presented in charts, tables and graphs) and measures of central tendency were used to analyse data. Findings showed that journals were the most utilized reference materials in the dissertations. Also, poultry nutrition works had the highest number of dissertations followed by agricultural biochemistry and nutrition. The lowest number of dissertations was from forage production and management and monogastric nutrition with just two dissertations each. The findings from this study could serve as a user study with implications for both collection development and user services design in libraries. Future studies could focus on ascertaining the implication of collection of reference materials to project and article referencing, instruction in classes and outreach.

Kuruppu and Moore (2008)[4] analyzed the findings of a study conducted to examine the types of information used by graduate students in the fields of biological and agricultural sciences at Iowa State University (ISU). The citations of doctoral dissertations submitted in nine

agricultural and biological science subject fields (crop production and physiology; molecular, cellular, and developmental biology; entomology; genetics; microbiology; plant breeding; plant pathology; plant physiology; and soil science) at ISU from 1997–2006 were analyzed. The article discusses the types and ages of resources cited in the different subject fields studied. The most cited journals in each discipline were identified, and the journal title dispersion was examined.

Vallmitjana and Sabate (2008)[5] studied the bibliometric study carried out on the citations in the field of chemistry Ph.D. dissertations to ascertain what types of documents are the most frequently used in the research process, the most frequently consulted journals and obsolescence rate of the journals. The analysis covered 46 doctoral theses presented at the Institute of Químic de Sarriá (IQS) from 1995 to 2003. The results obtained from the 4,203 citations revealed that the most frequently used documents were scientific papers, which accounted for 79 percent of the total; 33 journals met 50 percent of the informational needs; and the age of 50 percent of the citations was no older than 9 years. Finally, the results can be used as a tool for the collection management of the library.

Keat (2007)[6] analyzed the characteristics of the cited literature in the Master of Library and Information Science (MLIS) dissertations submitted to University of Malaya. This includes finding out of the various types of resources used in their research and identifying core

journal titles. A total of 3206 citations were compiled from 40 Masters in Library and Information Science dissertations submitted to University of Malaya from 2000-2005. The findings revealed that journals were the most cited form of publication and they were prominently in English. A more frequent usage of current than retrospective publications was made, which were mostly primary sources of information. The results also revealed frequent use of publications in the subject area of "Information use, need, seeking". Writers from United States of America contributed the most in this literature. The findings revealed that highest number of citations utilized are between the age of 6-10 years which corresponds to the years 1995-1999. The most cited journals of this literature were found to be College & Research Libraries, followed by Journal of the American Society for Information Sciences. The findings revealed that only two from the list of the top 17 most cited journal titles are listed in Journal Citation Report (JCR). They are Aslib Proceedings with an impact factor of 0.333 and Journal of Information Science with an impact factor of 0.747. Of the 17 core journals, only 11 are available in the University of Malaya Library. The authorship pattern shows that single authors are more frequently cited. The core authors of cited documents results showed that the majority of authors were cited only once and 43.50% of the citations were from authors that were cited more than twice. To conclude this research, the citation analysis of MLIS dissertation follows

the norms of other citation analysis research that has been done in other fields. It was found that journals were the most widely used materials to be cited by dissertation authors, and single authors dominates the authorship pattern. Thus these relevant information shows the similarity of this research to other research.

Keat and Kaur (2006)[7] analyzed the application of citation analysis method to examine the use of information resources by postgraduate students of Master in Library and Information Science (MLIS) in preparing their dissertation at the University of Malaya. References from a sample of 40 MLIS thesis from the period 2000-2005 were examined for: year of publication; author; source title; bibliographic format; language; subject category; and place of publication. Core journal titles are compared with Journal Citation Report (JCR) listing and also for availability at the University of Malaya library. The study shows that journals and books are still the most used sources for information and there is a steady increase in the use of electronic media by LIS researchers. Authorship pattern indicates preference for single authored works. This study serves as a baseline indicator of resources used by LIS researchers. It can be utilised by librarians to focus collection development to support research needs.

Maharana and Nayale (2006)[8] analyzed the scholarly use of the web resources in LIS research. In the present study, a total of 837 citations

spread over 95 scholarly papers published in the proceedings of the Society of Information Science (SIS)-2005 conferences were examined and 293 (34.88%) web citations were identified. All the 292 web citations were scanned and data relating to type of web domains, file formats, style of citations, etc were collected through a structured check list. The study revealed that 297 (34.88%) out of 837 were web citations, providing a significant correlation between the use of internet resources and research productivity of LIS professionals in India. The highest number of web citations (35.6%) was from edu/ac type domains. Most of the web resources (46.9) cited in the study was hypertext markup language (html) files. The findings help the academics and the research community in LIS to assess the impact of web on scholarship.

Labonte (2005)[9] used citation analysis was used to determine that the Sciences-Engineering Library at the University of California at Santa Barbara is meeting the needs of an interdisciplinary group of 60 faculty members at the New California Nano-System Institute.The latest three publications of each faculty member(published within the last two years)were analyzed in two ways using the Science Citation Index i.e. the journals they were published in and the journals where cited articles were published. The results indicated that the library subscribes to 98% of journals in which faculty members have published or were cited frequently. This information is useful to map the citation patterns of new

interdisciplinary field and can be used for future collection management decisions.

Sinn (2005)[10] conducted a citation analysis of the 1980-2002 Mathematics and Statistics dissertations at an Ohio University was compared with citation analysis of other science disciplines published in the literature. Mathematics and statistics students were found to use their journal literature less frequently than the applied fields like Engineering and Computer Science. The same general trend among the disciplines was seen when little dispersion was examined. Mathematics and Statistics used more journal title than Chemistry and fewer journal titles than Engineering. Collection managers can use the results of the study to protect a larger core journal collection for mathematics and to keep monograph purchasing at an adequate level.

Haycock (2004)[11] studied the citation analysis of education dissertation for collection development. Its major objective was to help in collection development in the academic library. A reference list of 43 educational dissertations on curriculum and instruction completed at the University of Minnesota during the calendar years 2000-2002 were analyzed to inform collection development. As one measure of use of the academic library collection, the citation analysis yielded data to guide journal selection, retention and cancellation decisions. The project aimed to ensure that the most frequently cited journals were retained on subscription. The serial

monograph ratio for citation also was evaluated in comparison with other studies and explored in the context of funding rations. The results of citation studies can provide a basis for liaison conversation with faculty in addition to guiding selection decisions. This research project can serve as a method for similar projects in other libraries that look at literature in education as well as other fields.

Okiy (2003)[12] studied the citation analysis of education dissertations at the Delta State University, Abraka, Nigeria. A total of 4,012 citations in 70 postgraduate dissertations in education submitted to the Delta State University Library between 1992 and 2002 were studied. Most post graduate students in education used more textbooks (60.3 per cent), than other forms of library materials. Four of the top ranked journals, including the most popularly used the West African Journal of Education (WAJE) are available in the library. A total of 12 (66.7 per cent) of the 18 most popularly used journals are US publications, thus creating the need for Delta State University Library to improve on its local journal collection. Of the 18 most cited journals, six (33.3 per cent) ranked among the list of significant journals in the field of education.

Herring (2002)[13] analyzed the use of electronic resources in scholarly electronic journals. Although information gathering and use patterns in the traditional print environment have been studied for many years, the

electronic environment presents a new and relatively unexplored area for such study. This article describes a citation analysis of research articles from scholarly electronic journals published in 1999–2000. The analysis focused on the extent to which scholars are using electronic resources and the types and subject areas of online resources that are being referenced. Results indicate a growing reliance on electronic resources by scholars, a high occurrence of nontraditional types of resources, and a relatively high use of interdisciplinary references.

Bandgopadhyay and Nandi (2001)[14] studied the citation analysis of references used in doctoral dissertations of Political Science. The citation analysis of nine doctoral dissertations in political science submitted to the Buedwan University (West Bengal) over a period of 5 years (1991-1995) was carried out. The work described the bibliographic forms of literature used and presented a ranked list of periodicals with corrected citation numbers. According to Sengupta's formula, it was concluded that the most favoured form of literature is the book followed by periodicals. Out of the total less than half of the number of periodicals are used to satisfy majority of the periodical requirements. The most highly ranked periodical was Economic and Political Weekly, covering over substantial percent of periodical requirements.

Gooden (2001)[15] analyzed the citation analysis of dissertations accepted in the Department of Chemistry at the Ohio State University

between 1996-2000 was performed as a way to determine material use. The 30 dissertations studies generated a total of 3,704 citations. Types of materials cited, currency of literature, and dissertation topics were all analyzed. The current results corroborate past research by other authors. Journal articles were cited more frequently than monographs that is 85.8% of the citations were journal articles and 8.4% of the citations were monographs. The results of this study may be used to assist OSU and other universities in chemistry collection development. This study was limited to the dissertations housed in the Science & Engineering Library covering the years 1996-2000. Commencement programs from the University for each quarter were collected to find the chemistry Ph.Ds. After the candidates were selected, their names were entered on a coding spreadsheet and the library's automated catalog was searched to find the students' dissertations. Dissertations from this range (1996-2000) total 117. Based on the lengthy duration necessary to code and type the 168 theses analyzed by Chambers and Healey (1973), this author extracted 25% of the 117 dissertations to obtain a more controllable yet accurate sample.

Deshpande and Rajyalakshmi (1997)[16] conducted a study of 65 dissertations in Library and Information Science submitted to Nagpur University during the period 1990-94.The study reveals the majority of the works was in the field of literature. Survey the trends in various

aspects of library and information science. The objectives of this study was to find the types of cited sources materials, authorship pattern and chronological distribution of cited references. The study of these dissertations also reveals that the data collection was dependent on the availability of the information from local libraries and information centres.

Reed (1995)[17] studied the citation analysis of faculty publication beyond science citation index and social science citation index. When evaluated for promotion or tenure , faculty members are increasingly judged more on the quality than on the quantity of their scholarly publications. As a result, they help from librarians in locating all citations to their published work for documentation in their curriculum vitae, citation analysis using science citation index and social science index provides a logical starting point in measuring quality, but the limitations of these source leave a void in coverage of citations to an author's work. This article discusses alternative and additional methods of locating citations to published works.

Vaishnav and Dharmapurikar (1990)[18] studied that the present work analyses the citation provided in articles in the journal of the Herald of Library Science is to know citation per article, types of documents geographical distribution of journals cited, chronological distribution of

citations, obsolescence of library literature, ranking of authors cited, frequency of periodicals used and ranking of journals.

Arjun Lal (1988)[19] analyzed the citations in Agricultural Research. In this study by the help of citation analysis, an attempt has been made to identify the most important source of citation, its geographical and chronological distribution in the field of agronomic research ion agriculture in Bihar. A total of 1696 citations were collected, compiled and analyzed. The most important journals identified through the technique of citation analysis as indicated by their frequency of citation were Indian Journal of Agronomy, Indian Journal of Agricultural Science, Journal of Indian Society of Soil Science, Indian Farming, Fertilizer News, Agronomy Journal, Madras Agriculture Journal, Field Crop Abstract and Plant & Soil. Among the cited journals India occupied first rank as a country of publication followed by USA and UK. The chronological distribution of citations to journals suggests that the researchers in agriculture cite from current journals and seldom refer to back numbers.

De Oliveira (1984)[20] studied the citation pattern in veterinary medicine dissertations. This study intends to find out the literature use pattern by the researchers in the field of veterinary medicine in Brazil. It was observed that the user in the field of veterinary medicine have heavily dependent upon periodical literature (70%) and books(19%).Nearly 36%

journals emerged from USA, covering 52% literature followed by Great Britain and Brazil and the half life of veterinary medicine literature is 12 years.

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Chapter-4

Research Methodology

CHAPTER-4

RESEARCH METHODOLOGY

Citation analysis is one of the most important bibliometric techniques involving analysis of the references forming a part of primary communication. Citations are the formal explicit linkages between publications that have particular points in common.

Citation analysis of MLI Sc Dissertations form an important source of information, such studies may be useful for acquisition of material, provision of-better services to patrons and knowing the location of materials. What part of literature is cited most, how long the literature remains useful to readers, and languages of most cited publication, knowledge of all these provides guidance to collection development policies, individual item selection, retention and binding decisions.

PURPOSE

Citation analysis is one of the popular methods employed in recent years for identification of core documents and complex relationship between citing and cited documents for a particular scientific community in a geographical proximity. The purpose of the present study is to investigate the use pattern and use behaviour of library and information science researchers particularly engaged in the field of today's digital library and information environments in different countries.

SCOPE

The topic of present study is "Citation Analysis of M.L.I.Sc dissertations submitted in the Department of Library and Information Science, A.M.U. Aligarh (2010-2011)". The main purpose of the study is to find out the current citation trends. For this purpose the citations from each of dissertation of Masters of Library and Information Science (M.L.I.Sc.) are taken for analysis from 2010-2011.

OBJECTIVE

The main objectives of the study are:

- To determine the year- wise distributions of citations.
- To study the use pattern of different types of documents cited.
- To observe chronological distribution of citations.
- To study the distribution by place of publication.
- To identify the language-wise distribution of citations.
- To study authorship pattern of citations.
- To identify the core and essential journal in the field.
- To compile the rank list of cited authors.

METHODOLOGY

The first step in this study is to select the source documents from which data is to be collected. For this purpose citations from each of the dissertations were collected for the study that amounted to 1506 usable citations that was used for the analysis.

- **Collection of data**

The first and the most important task is to collect the references from each of the dissertations of Masters of Library and Information Science (M.L.I.Sc). The data was collected for 2010-2011 i.e. the period of 2 years.

- **Preparation of Entries**

The data relating to all the references appended to the dissertations during the period has been collected and tabulated.

I Analysis

All citations were arranged and rearranged in order to conduct the following type of studies.

1. Year wise distribution

This study reveals number of citations that were cited in a given year. The pattern shows the increasing or decreasing trend of the references used.

2. Form wise distribution

Literature cited in M.L.I.sc. dissertations (2010-2011) is published in different forms like journals, books, conference proceedings, bulletins, reports etc. The information regarding the form was collected from the source data sources and tabulated to find out the most dominant form of literature.

3. Chronological analysis of citations

In this study, the cited references are distributed in different time interval according to their date of publication. This makes the pattern of citations to reveal the most productive period.

4. Geographical scattering of citations

This is done to determine the geographical scattering of citations while studying the use patterns of research literature in the subject under study. The place of publication is given in the citations. The entries were then grouped on the basis of their country of origin. They were then tabulated and ranked in a table.

5. Language wise distribution

It is important to know the most dominant language used for scientific communication in the subject. The language of the cited document is determined by the place of publication and the language used in the periodicals with the help of the Ulrich International Periodical Directory.

6. Authorship pattern

It helps to know the most productive contributor in the subject. For this purpose, the information about all the authors were retrieved, arranged and tabulated in order to find the type of authorship.

7. Ranking of periodicals

It helps to identify the core periodical containing the research literature used in M.L.I.Sc dissertations. It is necessary to know the most

productive journal used in references, for further study of the subject. This information will be useful for librarians, students and research scholars, as core journal in the field can be identified. For this purpose, a rank list of periodicals was prepared.

8. Ranking of Cited Authors

It helps to know the eminent personalities in the subject, whose work is used by the authors to refine their ideas on the subject or topic. The data entry of different cited authors in the field were separated out. Cited authors were ranked in order of decreasing productivity. The results are then tabulated.

LIMITATIONS

1. The study is limited to the Citation Analysis of M.L.I.Sc. Dissertation submitted in the Department of Library and Information Science during the years 2010-2011, A.M.U.
2. The dissertation number '614' was missing in the seminar library. So, it could not be included in the study.
3. One of the dissertation contained no bibliography (dissertation number '620'). So it was excluded from the study.
4. As the medium of the study at M.L.I.Sc. is English, therefore, language-wise distribution of the study is not conducted.
5. The study has been limited to the journal publications only.

SIGNIFICANCE OF THE STUDY

- Such studies can serve as guideline for the libraries to decide which publication should get a higher priority during acquisition.
- Such studies can serve as guideline for the document list to information scientists in deciding which publication need to be indexed in CAS and covered in SDI services.
- Such studies will be of much value for the libraries in deciding active periodicals and also which should be weeded out from the live collection.
- It will also indicate that not all the journals require durable binding. only the journals which are frequently used should be bound with durable and costly materials.

Chapter-5

Data Analysis, Interpretation and Representation

CHAPTER-5

DATA ANALYSIS, INTERPRETATION AND REPRESENTATION

The M.L.I.Sc. Dissertations submitted in the department of library and information science accepted by A.M.U., Aligarh during 2010-2011 has been taken as the source data for the present study. Citation analysis is the methodology chosen for the study, which is based on the 1506 bibliographic references. These citations stand as the baseline for the data analysis, interpretation and representation.

1. YEAR – WISE DISTRIBUTION OF PERIODICALS

It can be observed from table – 2 that nearly 99.97% of the citations were of the period ranging from 2011-2020. Document pertaining to earlier period were cited less..

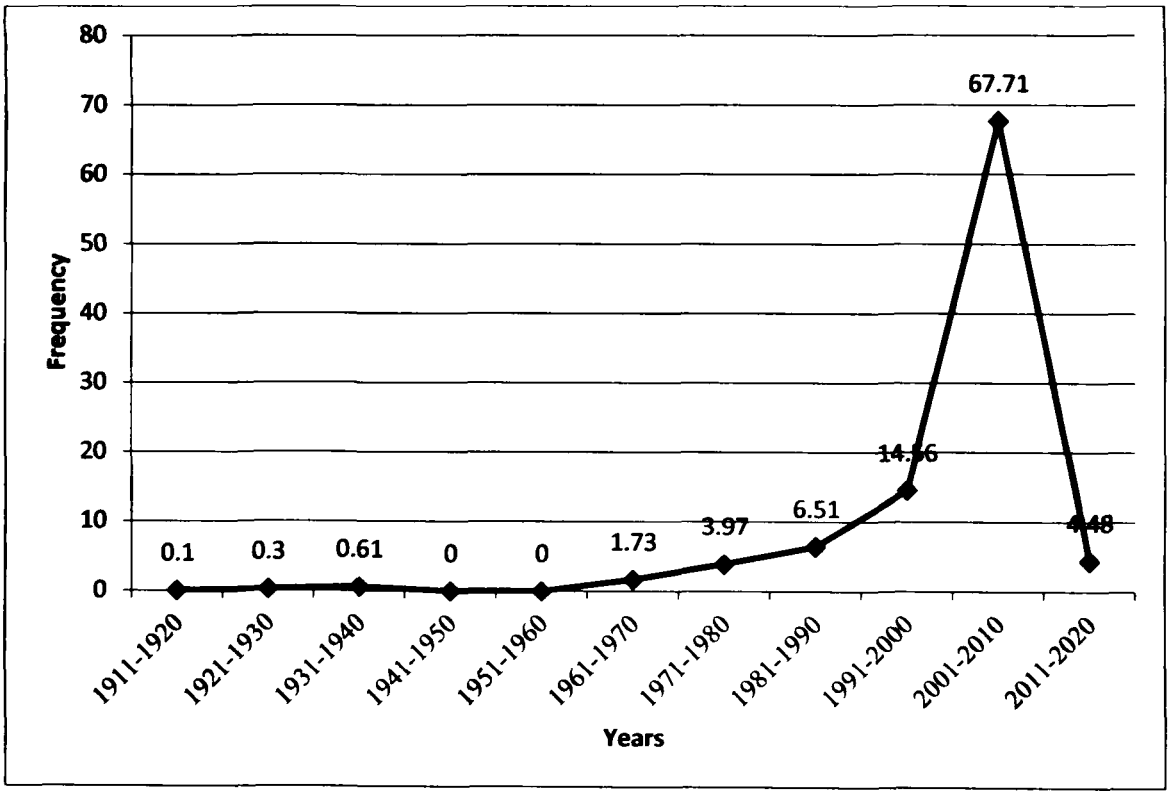
The table-1 showed that the maximum number of papers were published during the year 2011-2020, i.e. 44 (4.48%) and the minimum appeared in the years 1911-1920, i.e. 1 (0.10%)

TABLE 1: YEAR – WISE DISTRIBUTION OF PERIODICALS

S.No.	Period of Origin	Frequency of Occurrence	%age of Frequency	Cumulative %age of Frequency
1	1911-1920	1	0.10	0.10
2	1921-1930	3	0.30	0.4
3	1931-1940	6	0.61	1.01

4	1941-1950	6	0.61	1.01
5	1951-1960	0	0	1.01
6	1961-1970	17	1.73	2.74
7	1971-1980	39	3.97	6.71
8	1981-1990	64	6.51	13.22
9	1991-2000	143	14.56	27.78
10	2001-2010	665	67.71	95.49
11	2011-2020	44	4.48	99.97
	Total	982	99.97~100	

FIG.1 YEAR – WISE DISTRIBUTION OF PERIODICALS



2. COUNTRY -WISE DISTRIBUTION OF PERIODICALS

The countries of origin of all publication could not be ascertained from the citation themselves. They are obtained from the Ulrich's International Periodical Directory.

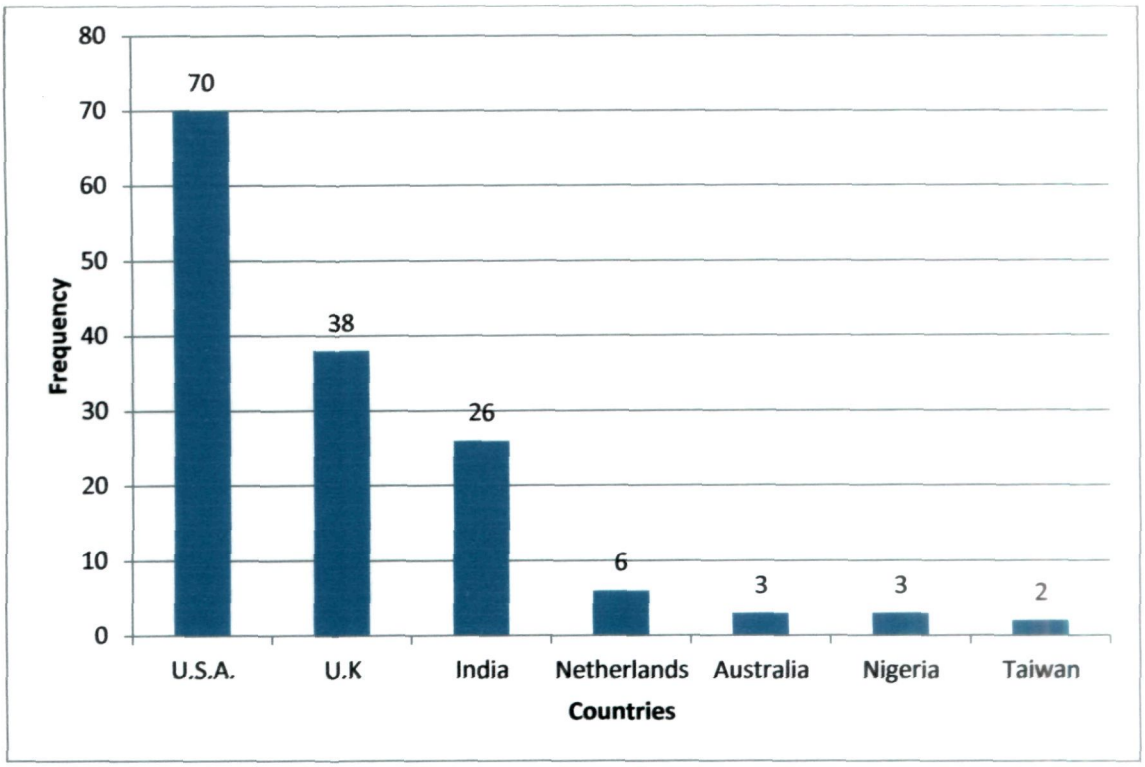
Table-2 contains a list of 12 countries producing material on Library and Information Science. These countries have been ranked on the basis of frequency of occurrence of items. It is observed that 45.75% of the total articles were published from U.S.A. This is followed by U.K., India and Netherlands which produce 24.83%, 16.99% and 3.92% items respectively.

TABLE 2: COUNTRY WISE DISTRIBUTION OF PERIODICALS

S.No.	Rank	Name of Country	Frequency	%age of Frequency	Cumulative %age of Frequency
1	1	U.S.A.	70	45.75	45.75
2	2	U.K	38	24.83	70.58
3	3	India	26	16.99	87.57
4	4	Netherlands	6	3.92	91.49
5	5	Australia	3	1.96	93.45
6	5	Nigeria	3	1.96	95.41
7	6	Taiwan	2	1.307	96.71
8	7	China	1	0.65	97.36
9	7	Malaysia	1	0.65	98.01

10	7	Romania	1	0.65	98.66
11	7	South Africa	1	0.65	99.31
12	7	Sri Lanka	1	0.65	99.96
		Total	153	99.96~100	

FIG. 2 COUNTRY- WISE DISTRIBUTION OF PERIODICALS



3. FORM – WISE DISTRIBUTION

Information is available in a variety of forms, i.e., Journals, e- Resources, Book, Bulletins, Magazines, Dictionaries, Conference Proceedings, Encyclopedias, Reports, Project etc. The main objective of the study is to find out most used form of source material. It will help the students to known the most dominant from of documents in which information is

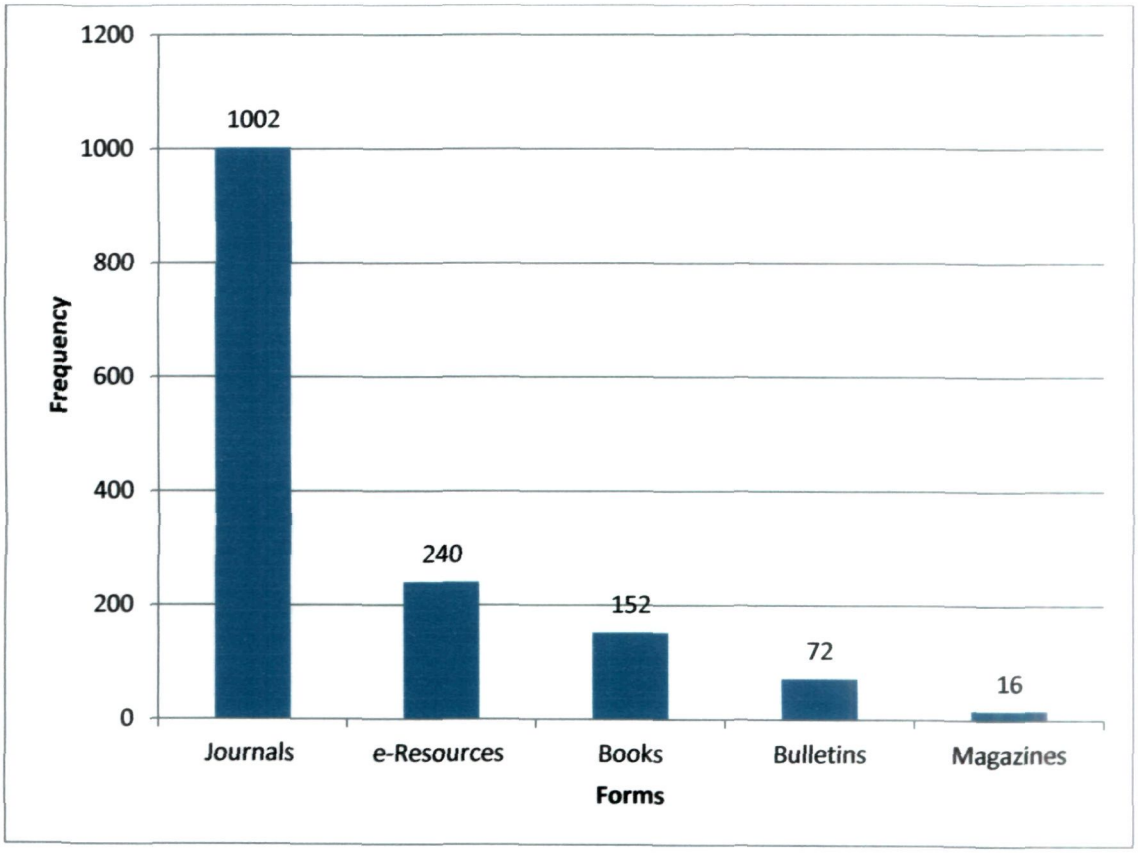
being produced in the subject. From Table- 3 it is evident that the journals have the highest number of citations, accounting, for (66.53%) Means that the students in the field of library and information science consulting this literature for the information's use by them e- Resources are the second highest group (15.93%), followed by book (10.09%), followed by bulletins (4.78%), followed by Magazines (1.06%) followed by dictionaries (0.66%), followed by conference proceeding (0.33%), followed by encyclopedias (0.26%), followed by report (0.26%), and followed by project (0.06%), of the total respectively.

TABLE 3: FORM – WISE DISTRIBUTION

S. No	Rank	Form of document	Freq.	% age of frequency	Cumulative % age
1	1	Journals	1002	66.53	66.53
2	2	e- Resources	240	15.93	82.46
3	3	Books	152	10.09	92.55
4	4	Bulletins	72	4.78	97.33
5	5	Magazines	16	1.06	98.39
6	6	Dictionaries	10	0.66	98.39
7	7	Conference Proceedings	5	0.33	99.38
8	8	Encyclopedias	4	0.26	99.64
9	8	Reports	4	0.26	99.9

10	9	Project	1	0.06	99.96
		Total	1506	99.96~100	

FIG. 3 FORM – WISE DISTRIBUTION



4. RANKING OF AUTHORS

There are a number of authors in every subject. However, some of the authors are well known personalities in a given field. Therefore it is important to know eminent authors in the field of Library and Information Science. This information is useful for the libraries as well as the users. The name of authors and number of contributions are given in

table-4, from this analysis Biradar, B.S. has the highest frequency among the 294 authors.

TABLE 4: RANKING OF AUTHORS

S.No.	Rank	Name of Author	Frequency
1	1	Biradar, B.S	12
2	2	Pritchard, Allan	9
3	3	Naushad Ali P.M	8
4	4	Sampath Kumar, B.T	7
5	4	Lohar, M.S	7
6	4	Kumbar, Mallinath	7
7	5	Baughman, J.C.	6
8	6	Nicholas, David	6
9	7	MAdhusudhan, M	5
10	7	Khaiser, Nigam	5
11	7	Raza, M.Masoom	5
12	7	Upadhyay, Ashok Kumar	5
13	7	Jamali, Hamid R	5
14	7	Tenopir, Carol	5
15	7	Eale, N.B	5
16	7	Lancaster, F.W	5
17	8	Singh, S.P	4

18	8	Maharana, Bulu	4
19	8	Mahapatra, R.K	4
20	8	Riahinia, Nosrat	4
21	8	Maheswarappa, B.S	4
22	8	Mohamimad Nazim	4
23	8	Patil, D. B	4
24	8	Yeats, Robin	4
25	8	Mahmood, Khalid	4
26	8	Prasad, H.N	4
27	8	Balasubramaniam, N	4
28	8	Madhuri Devi Singh	4
29	8	Bradford, S. C	4
30	8	Adeyoyin, Samual Olu	4
31	8	Galpraith, B	4
32	8	Deshpande, Neela J	4
33	9	Sahoo, K.C	3
34	9	Salaam, M.O	3
35	9	Haridasan, S	3
36	9	Okiy, Rose B	3
37	9	Kumar, P	3
38	9	Ranganathan, S.R	3

39	9	Maya, Devi	3
40	9	Hirwade, Mangla	3
41	9	Hirwade, Anil	3
42	9	Markland, Margaret	3
43	9	Xia, Jingfeng	3
44	9	Promodine	3
45	9	Satiya, M.P	3
46	9	Joint, Nicholas	3
47	9	Kaur, Kiran	3
48	9	Westell, Marg	3
49	9	Guha, B	3
50	9	Panda, K.C.	3
51	9	Ahmad, N.	3
52	9	Saraf, Veena	3
53	9	Sridhar, M.S.	3
54	9	Asemi, Asefeh	3
55	9	Angrosh, M.A.	3
56	9	Shien-Chang Yu	3
57	9	Bhatt, R.K.	3
58	9	Small, H.	3
59	9	White, E.C.	3

60	9	Garfield, Eugene	3
61	9	Loka, A.J.	3
62	9	Fairthorne, R.A.	3
63	9	Mishra, P.C.	3
64	9	Hawkins, D.T.	3
65	9	Potter, W.G.	3
66	9	Zainab, A.N.	3
67	9	Abdulllah, Abrizah	3
68	9	William, Peter	3
69	9	Talawar, V.G.	3
70	9	Mulla, K.R.	3
71	9	Mukherjee, Bhaskar	3
72	9	Huntington, P.	3
73	9	Thanuskodi, S.	3
74	10	Mahajan, Preeti	2
75	10	Shailendra Kumar	2
76	10	Garg, B.S.	2
77	10	Chopra, H.R	2
78	10	Rajashekar, T. B.	2
79	10	Abu Bakar Bakeri	2
80	10	Olatokum, Wole Michael	2

81	10	Makindde, Olayenka	2
82	10	Sengupta, IN.	2
83	10	Martyn, J.	2
84	10	Qsareh, F.	2
85	10	Mc Donald, R.	2
86	10	Thakur, Urmila	2
87	10	Hasan, M,D. Ehasa	2
88	10	Kaur, Sarbinder	2
89	10	Yiotis, Kristin	2
90	10	Parameshwar, S.	2
91	10	Zorm, M.J	2
92	10	Marshell, L	2
93	10	Singh, A.N	2
94	10	Tahir, Muhammaad	2
95	10	Bhattacharya, Swati	2
96	10	Prasher, R.G	2
97	10	Tripathi, Manorama	2
98	10	Fatima, N	2
99	10	Vignair, Barbara	2
100	10	Susaner, Sanchez	2
101	10	Devakos, Rea	2

102	10	Gayatri, Doctor	2
103	10	Kalpana, N	2
104	10	Gooden, Angele M	2
105	10	Bellarado, T	2
106	10	Jacobs, N.A	2
107	10	Kessler, N.A	2
108	10	Oduwole, A.A`	2
109	10	Roberts, A	2
110	10	Moore, David H	2
111	10	Zhang, Li	2
112	10	Vrooms, V.H	2
113	10	Barbara, S	2
114	10	Das, Suchitra	2
115	10	Khan, Abdul Mannan	2
116	10	Mc Kinght Clifff	2
117	10	Potter, P.K.	2
118	10	Alderfer, S.	2
119	10	Pathak, R.D.	2
120	10	Cooke, C.A.	2
121	10	Xie, H.I.	2
122	10	Mustafa, Younis A.R.	2

123	10	Haider, S.J.	2
124	10	Ellis, David	2
125	10	Benson Adogbeji, Oghenevwogaga	2
126	10	Khan, Sadia	2
127	10	Sawden, David	2
128	10	Singh, S.N.	2
129	10	Andrems, James E.	2
130	10	Mehtab Alam Ansari	2
131	10	Armstrong, Chris	2
132	10	Young, Elizabeth	2
133	10	Singh, K.P.	2
134	10	Ikoja-Odongo, J.R.	2
135	10	Khan, Shakeel. A.	2
136	10	King, Donald. W.	2
137	10	Singh, Gurudev	2
138	10	Hemming, Willam S.	2
139	11	Maheshwarappa, B.N.	1
140	11	Sujatha, H.R.	1
141	11	Rani, S.	1
142	11	Graham, John-Baver	1
143	11	Skaggs, Bethamy Latham	1

144	11	Stevens, Kimberley K.	1
145	11	Johnson, Richard K.	1
146	11	Kelly, John C.	1
147	11	Long, Earl K.	1
148	11	Lung, Shirley W	1
149	11	Kittal, Rekha	1
150	11	Mahesh, G.	1
151	11	Pickton, Margaret	1
152	11	Beaton, M.	1
153	11	Bell, L.	1
154	11	Benerty, C.A.	1
155	11	Carey, K.	1
156	11	Camlsso, J.	1
157	11	Chandel, A.S.	1
158	11	Cylke, F.K.	1
159	11	Duckett, P.S.	1
160	11	Pratt, R.	1
161	11	Garcia, L.G.	1
162	11	Invall, B.	1
163	11	Nielsen, G.S.	1
164	11	Kinnell, M.	1

165	11	Creaser, C.	1
166	11	Koganurathan, M.M.	1
167	11	Choukimath, P.A.	1
168	11	Koulikourdi, A.	1
169	11	Manitsaris, A.	1
170	11	Krikelas, J.	1
171	11	Kuhlthan, C.C.	1
172	11	Ocholla, D.N.	1
173	11	Owen, D.	1
174	11	Williamson, K.	1
175	11	Chander, D.	1
176	11	Brow, A.	1
177	11	Basu, A.	1
178	11	Dandona, L.	1
179	11	Elle, M.	1
180	11	Goel, K.	1
181	11	Gupta, B.M.	1
182	11	Dhanwan, S.	1
183	11	Hugenholty	1
184	11	Jelercic	1
185	11	Kademani, B.S	1

186	11	Kirigia, J. M	1
187	11	Mcheman, P	1
188	11	Nutt, B	1
189	11	Tunis, S.R	1
190	11	Banner, J	1
191	11	Ventovouri, T	1
192	11	Bevilacqua, Fabrizia	1
193	11	Chirra, Rekha	1
194	11	Harper, Stephen	1
195	11	Kapoor, Kanta	1
196	11	Holmquist, Jane E	1
197	11	Moghaddam Golnessa Galyani	1
198	11	Rao, Mamidi Koteswara	1
199	11	Ray, Kathryn	1
200	11	Day, Joam	1
201	11	Rogger, Sally A	1
202	11	Trivedia, Mayaank	1
203	11	Joshib, Anuradha	1
204	11	Niron, Neal D	1
205	11	Pattanaik, BAbita	1
206	11	Adalian, Paul T	1

207	11	Swanson, Judy	1
208	11	Byerley, Suzanne L	1
209	11	Coetzee, Marijke	1
210	11	Curtic, Donmelyn	1
211	11	Gleason, Bernard W	1
212	11	Hasienicz, Christian	1
213	11	Henzel, Jerry	1
214	11	Holden, Hugh	1
215	11	Jotten, R.K.	1
216	11	Kannamadi, Satish	1
217	11	Mc Crea, Richard	1
218	11	Schmetzke, Anel	1
219	11	Wusteman, Judith	1
220	11	Hoppock, H.C.	1
221	11	Bullock, M.L.	1
222	11	Roach, K.N.	1
223	11	Jornot, P.C.	1
224	11	Raddy, Pulla V.	1
225	11	Dhar, Upinder	1
226	11	Jain, Rajneesh	1
227	11	Orphan, Christopher	1

228	11	Pater, Manasseh. K.	1
229	11	Cooper, Carry L.	1
230	11	Niels, O. Pors	1
231	11	Adio, Gboyega	1
232	11	Rusbalt, Cryl E.	1
233	11	Berger, Agot	1
234	11	Bamigboye, O.B.	1
235	11	Benjune, Mathew	1
236	11	Jagboro, K.O.	1
237	11	Adewale, T.O.	1
238	11	Jeevan, V.K.	1
239	11	Nawe,Jjulita	1
240	11	Onadiran, R.W.	1
241	11	Park, Iljong	1
242	11	Rahel, Cheng	1
243	11	Egghe, L.	1
244	11	Haitun, S.D.	1
245	11	Hood, Willian W.	1
246	11	Thelwall, Mike	1
247	11	Zitt, Michel	1
248	11	Gautam, J.N.	1

249	11	Atakan, C.	1
250	11	Stanley, A.E.	1
251	11	Daicy, J.E.	1
252	11	Okpala, A.E.	1
253	11	Oulanaov, A.	1
254	11	Vakkari, P.	1
255	11	Amritpal Kaur	1
256	11	Markwei, E.D.	1
257	11	Shamaprasad, M.	1
258	11	Barjak, F.	1
259	11	Brophy, J.	1
260	11	Bawdan, D.	1
261	11	Flecher, Gordan	1
262	11	Greenhill, Anita	1
263	11	Eurich-Fulcer, Rebecca	1
264	11	Sawavanan, P.	1
265	11	Zhang, Y.	1
266	11	Chen, Kuang-Hua	1
267	11	Derye, Roya Maghsoodi	1
268	11	Durdevic, Dusan z.	1
269	11	Haddad, Zahra	1

270	11	Kulshrestha, V.K.	1
271	11	Heinz Kill, Richard	1
272	11	Jelena, Jacimovic	1
273	11	Ruzica, Petronic	1
274	11	Slavdjub, Zivkonic	1
275	11	Knieval, Jeniffer E.	1
276	11	Kellsey, Charlene	1
277	11	Lin, Zao	1
278	11	Ghosh, Saptarshi	1
279	11	Koley, Susanta	1
280	11	Lokhande, Rahul S.	1
281	11	Roy, Pratap Chandra	1
282	11	Dinkiys, Debbi	1
283	11	Herrelson, Larry E.	1
284	11	Roy, Tennant	1
285	11	Thomas, Cockling	1
286	11	Barris, Maite	1
287	11	Emery, Jill	1
288	11	Goyal, Sonika	1
289	11	Gyeszly, Suzanne P.	1
290	11	Kovacs, Diane K.	1

291	11	Shipman, Joseph C.	1
292	11	Smith, Erin T.	1
293	11	Wineski, Richard	1
294	11	Welch, Ervin	1
295	11	Zhiqiang, W.U.	1

5. AUTHORSHIP PATTERN OF CITED PAPERS IN PERIODICALS

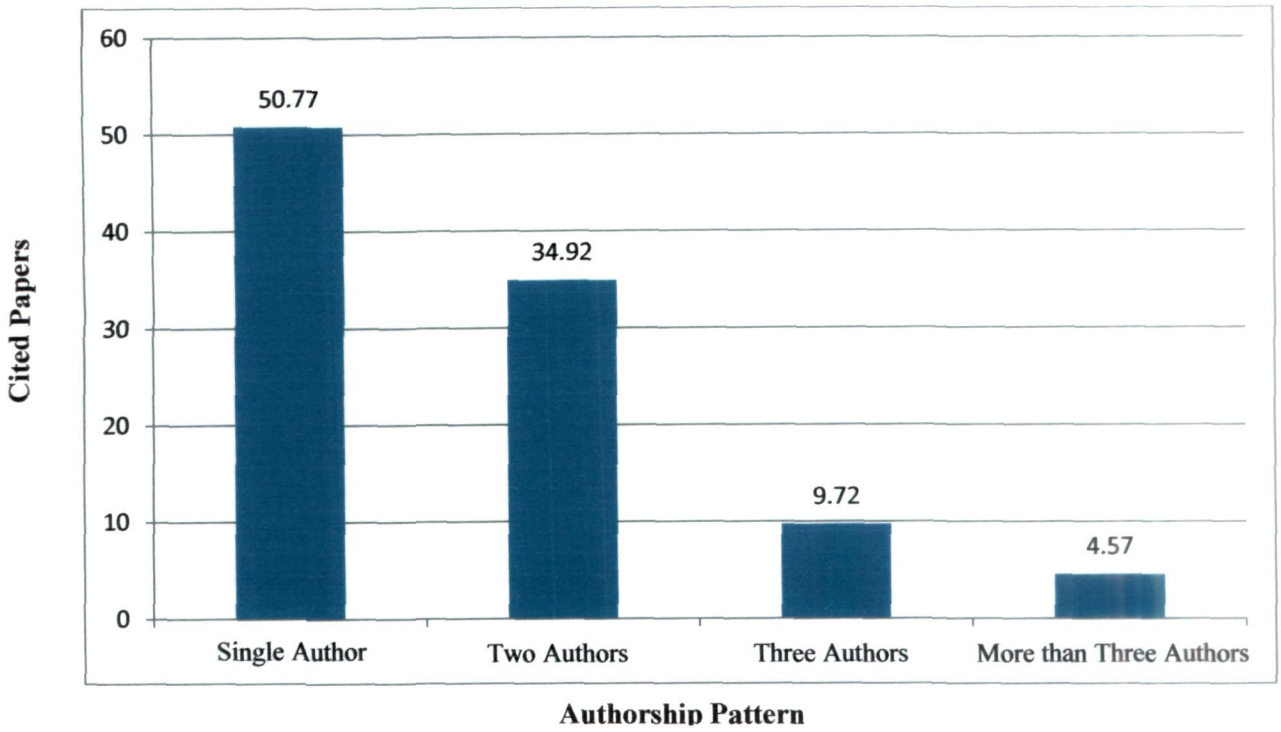
The distribution cited producing papers in periodicals according to the n umber of authors is shown in table-5. A majority of articles, in 522 (50.77% have been produce by single author, followed by a team of t2wo authors i.e. 359 (34.92), three authors i.e. 100 (9.72%) and more than three authors 47 (4.57%) respectively.

TABLE 5: AUTHORSHIP PATTERN OF CITED PAPERS IN PERIODICALS

S.No.	Rank	Number of Authors	Freq.of Occur	%age of Freq.	Cumulative %age of Freq.
1	1	Single Author	522	50.77	50.77
2	2	Two Authors	359	34.92	85.69
3	3	Three Authors	100	9.72	95.41

4	4	More than three authors	47	4.57	99.98
		Total	1028	99.98~100	

Fig. 5 AUTHORSHIP PATTERN OF CITED PAPERS IN PERIODICALS



6. RANKING OF PERIODICALS BY FREQUENCY OF CITATIONS

As the periodical are important source of current information, they play a vital role in scientific communication. The periodical that contribute most of the literature in a given field are the core journals. Identification of core journal in the subject under study will be useful from a point of view

of researches. The main aim of the present study is to identify the most important journal containing most of the literature of research value in the field of Library and Information of Science.

In the collected data 1002 out of 1506 references appended to the ournals were ranked upto 26th position and the table lists 161 periodicals, in which the frequency of item has been taken upto 1. Table-6 shows that first ranked was occupied by the journal tile "Annals of Library and (8.38%) of the total references. Next five positions are occupied by Journals like "The Electronic Library", i.e. (6.45%), "Journal of Documentation", i.e. (5.91%), "Library Hi Tech News", i.e. (4.94%), "Library Herald, i.e. (4.73%) and "Journal of Library and Information Science, i.e. (4.62%) respectively.

TABLE 6: RANKING OF PERIODICALS BY FREQUENCY OF CITATIONS

S.No	Rank	Name of the journal	Country	Freq	%age of Freq.	Cumulative %age of Freq.
1	1	Annals of Library and Information Studies	India	78	8.38	8.38
2	2	The Electronic Library	U.K.	60	6.45	14.83
3	3	Journal of Documentation	U.K.	55	5.91	20.74
4	4	Library Hi Tech News	U.K.	46	4.94	25.68
5	5	Library Herald	India	44	4.73	30.41
6	6	Journal of Library and Information Science	Taiwan	44	4.62	35.03
7	7	Library Review	U.K.	42	4.51	39.54
8	8	SRELS Journal of Information Management	India	37	3.97	43.51
9	9	ASLIB Proceedings: New Information Perspectives	U.K.	33	3.54	47.05
10	10	Library Philosophy and Practice	U.S.A	28	30.01	50.06
11	11	Collection Building	U.K.	27	2.90	52.96
12	12	College and Research Libraries	Chicago	24	2.90	52.06
13	13	Library Management	U.K.	18	1.93	57.47

14	13	OCLC System and Service: International Digital Library Perspective	U.K.	18	1.93	59.4
15	14	Journal of Medical Library Association	U.S.A.	16	1.72	62.84
16	14	New Library World	U.K.	16	1.72	62.84
17	15	Journal of American Society for Information Science and Technology	U.S.A.	15	1.61	64.45
18	16	The International Information and Library Review	U.K.	14	1.50	65.95
19	17	The Journal of Academic Librarianship	U.S.A.	12	1.29	67.24
20	18	Online Information Review	U.K.	9	0.96	68.2
21	18	DESIDOC Journal of Library and Information Technology	India	9	0.96	69.16
22	19	Psychological Studies	U.S.A	8	0..8.6	70..02
23	20	International CALIBER	U.S.A	7	0.75	70.77
24	20	Library Quarterly	U.S.A	7	0.75	71.52
25	20	Information Research	U.K.	7	0.75	72.27

26	20	Program: Electronic Library and the Information Systems	U.K	7	0.75	73.02
27	21	Library and Information Science Research	U.K.	6	0.64	73.66
28	21	Journal of Applied Psychology	U.S.A	6	0.64	74.3
29	21	Malaysian Journal of Library and Information Science	Malaysia	6	0.64	74.94
30	21	Journal of Librarianship and Information Science	U.K.	6	0.64	75.58
31	21	Special Libraries	U.S.A	6	0.64	76.22
32	22	Scientometrics	Netherlands	5	0.53	76.75
33	22	Library Progress (International)	India	5	0.53	77.28
34	22	Annals of Library Science and Documentation	India	5	0.53	77.81
35	22	Libri	Germany	5	0.53	78.34
36	23	Health Information and Libraries Journal	U.S.A	4	0.43	78.77
37	23	Reference Service Review	U.S.A	4	0.43	79.2
38	23	Biomed Central	U.K.	4	0.43	79.63

39	23	Medical Reference Service	U.S.A	4	0.43	80.06
40	23	Library Science with a slant to documentation	India	4	0.43	80.49
41	23	Library and Information Science Research	U.K.	4	0.43	80.92
42	23	Science Progress	U.S.A	4	0.43	81.35
43	23	Engineering	U.S.A	4	0.43	81.78
44	23	The Australian Library Journal	Australia	4	0.43	82.21
45	24	Current Contents	U.S.A	3	0.32	82.53
46	24	American Documentation	U.S.A	3	0.32	82.85
47	24	Indian Journal of Psychology	India	3	0.32	83.17
48	24	Facilities	U.K.	3	0.32	83.49
49	24	Journal of the Indian Academy of Applied Psychology	India	3	0.32	83.81
50	24	Interlending and Document Supply	U.K.	3	0.32	84.13
51	24	Computers and Indus-trial Engineering	Netherlands	3	0.32	84.45
52	24	Information Technology	U.S.A	3	0.32	84.77
53	24	Journal of the University Library Association of	Sri Lanka	3	0.32	85.09

		Sri Lanka				
54	25	Journal of China Society for scientific and technical information	China	2	0.21	85.3
55	25	Knowledge Organization	U.K.	2	0.21	85.51
56	25	Evidence Based Library and Information Practice	U.S.A	2	0.21	85.72
57	25	New Information Perspective	U.K.	2	0.21	85.93
58	25	Organization Behaviour and Human Performance	U.S.A	2	0.21	86.14
59	25	Journal of Business and Psychology	U.S.A	2	0.21	86.35
60	25	LIBRES Library and Information Science Research Electronic Journal	Australia	2	0.21	86.56
61	25	British Journal of Visual Impairment	U.K.	2	0.21	86.77
62	25	International Information, Communication and Education	Australia	2	0.21	86.98
63	25	New Review of Academic Librarianship	U.K.	2	0.21	87.19
64	25	The Information Scientist	U.K.	2	0.21	87.4
65	25	Science	U.S.A	2	0.21	87.61

66	25	Collection Management	U.S.A	2	0.21	87.82
67	25	NACLIN	India	2	0.21	88.03
68	25	Library Research	U.S.A	2	0.21	88.24
69	25	Library Sources and Technical Service	U.S.A	2	0.21	88.45
70	25	Advance in Librarianship	U.K.	2	0.21	88.66
71	25	Performance and Measurement Metrics	U.K.	2	0.21	88.87
72	25	Serials Librarian	U.S.A	2	0.21	89.08
73	25	New Review of Information Networking	U.K.	2	0.21	89.29
74	25	International Library Movement	India	2	0.21	89.5
75	25	Serials Review	Netherlands	2	0.21	89.71
76	25	The Bottom Line: Managing Library Finances	U.S.A	2	0.21	89.92
77	25	Journal of Information Management and Scientometrics	India	2	0.21	90.13
78	25	British Journal of Dermatology	U.K.	2	0.21	90.34
79	25	International Journal of Cancer	U.S.A	2	0.21	90.55
80	25	Issues in Science and Technology Librarianship	U.S.A	2	0.21	90.76

81	25	Journal of Washington Academy of Science	U.S.A	2	0.21	90.97
82	25	Information Outlook	U.S.A	2	0.21	91.18
83	25	Asian Libraries	U.K.	2	0.21	91.39
84	26	The Journal of Information and Management System	U.S.A	1	1.10	92.49
85	26	Harvard Business Review	U.S.A	1	1.10	93.59
86	26	Collection Management	U.S.A	1	1.10	94.69
87	26	Asian EFL Journal	U.S.A	1	1.10	95.79
88	26	Library Perspective	U.K.	1	1.10	96.89
89	26	Elservier Science	Netherlands	1	1.10	97.99
90	26	Information Development	U.S.A	1	1.10	99.09
91	26	Astrophysics Library	India	1	1.10	100.19
92	26	Journal of Applied Science Research	U.K.	1	1.10	101.29
93	26	RFID Journal	U.S.A	1	1.10	102.39
94	26	Managing Information with Information Technology Application	U.S.A	1	1.10	103.49

95	26	Webology	U.S.A	1	1.10	104.59
96	26	The Journal of Information and Knowledge Management Systems	U.K.	1	1.10	105.69
97	26	Personality Study and Group Behaviour	India	1	1.10	106.79
98	26	Oxford Journal	U.S.A	1	1.10	107.89
99	26	Wiley Inter Science	U.S.A	1	1.10	108.99
100	26	Stress Medicine	U.S.A	1	1.10	110.09
101	26	IFLA Journal	U.S.A.	1	1.10	111.19
102	26	Advances in Psychology	Netherlands	1	1.10	112.29
103	26	Journal of behavioural Sciences	U.S.A.	1	1.10	113.39
104	26	South Asia Journal of Management	India	1	1.10	114.49
105	26	Library Review	U.K.	1	1.10	115.59
106	26	Computer in Libraries	U.S.A.	1	1.10	116.69
107	26	Scroll	U.S.A.	1	1.10	117.79
108	26	Journal of Library and Information Studies	Taiwan	1	1.10	118.89

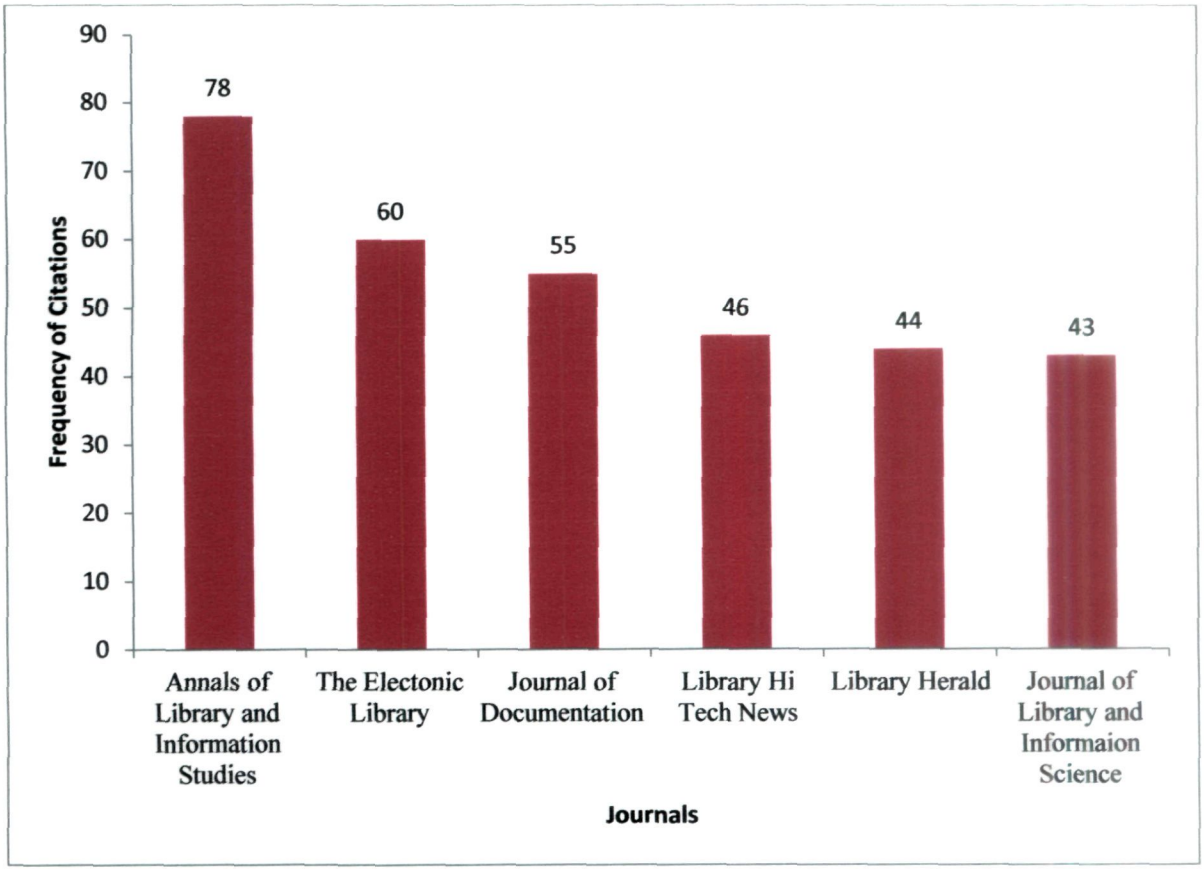
109	26	International Journal of Speech Technology	U.K.	1	1.10	119.990
110	26	Disability and Society	U.S.A.	1	1.10	121.09
111	26	INICAE	India	1	1.10	122.19
112	26	Review of Business	U.S.A.	1	1.10	123.29
113	26	Information Systems Indian Journal of Science and Technology	India	1	1.10	124.39
114	26	Information Today and Tomorrow	U.K.	1	1.10	125.49
115	26	Library and Information Science Review	Nigeria	1	1.10	126.59
116	26	British Journal of Educational Technology	U.K.	1	1.10	127.69
117	26	Adult Basic Educational Literacy Journal	U.S.A.	1	1.10	128.79
118	26	Journal of Education	U.S.A.	1	1.10	129.89
119	26	Library Journal	U.S.A.	1	1.10	130.99
120	26	Journal of Information and Management Systems	U.S.A.	1	1.10	132.09
121	26	Interdisciplinary Journal of Information, Knowledge and Management	U.S.A.	1	1.10	133.19
122	26	Journal of the Association of American Medical	U.S.A.	1	1.10	134.29

		College				
123	26	The International Journal of Language, Society and Culture	U.K.	1	1.10	135.39
124	26	Journal of Library History	U.S.A.	1	1.10	136.49
125	26	International Journal of Economics and Development	U.K.	1	1.10	137.59
126	26	Educational Technology and Society	U.S.A.	1	1.10	138.69
127	26	African Journal for the Study of Educational Issues (ATEDUI)	Nigeria	1	1.10	139.79
128	26	Journal of Educational Psychology	U.S.A.	1	1.10	140.89
129	26	Journal of Library and Information Technology	India	1	1.10	141.99
130	26	University News	India	1	1.10	143.09
131	26	Tech Trends	U.S.A.	1	1.10	144.19
132	26	Informatica Economica	Romania	1	1.10	145.29
133	26	Michigan Bar Journal	U.S.A.	1	1.10	146.39
134	26	Journal of Information Science and Technology	U.S.A.	1	1.10	147.49

		Association				
135	26	IASLIC	India	1	1.10	148.59
136	26	Library Theory and Research	U.S.A.	1	1.10	149.69
137	26	Information Devel -opment	U.S.A.	1	1.10	150.79
138	26	Proceeding of Digital Libraries	India	1	1.10	151.89
139	26	Gyankosh: The Journal of Library and Information Management	India	1	1.10	152.99
140	26	International Journal of Medical Informatics	U.S.A.	1	1.10	154.09
141	26	Transforming serials:This Revolution Continues	U.S.A.	1	1.10	155.19
142	26	Informatics for Health and Social Care	U.K.	1	1.10	156.29
143	26	Law Library Journal	U.S.A.	1	1.10	157.39
144	26	Journal of Library Service	India	1	1.10	158.49
145	26	Ozean Journal of Social Science	U.S.A.	1	1.10	159.59
146	26	Indian Journal of Dermatol Venexeol Lepreol	India	1	1.10	160.69
147	26	International Journal on Grey Literature	U.K.	1	1.10	161.79
148	26	Journal of Medical Virology	U.S.A.	1	1.10	162.89

149	26	Information Services and Use	Netherlands	1	1.10	163.99
150	26	Brazilian Journal of Information Science	Brazil	1	1.10	165.09
151	26	Libraries and RSS	India	1	1.10	166.19
152	26	Feliciter	U.S.A.	1	1.10	167.29
153	26	Information System	Netherlands	1	1.10	168.39
154	26	Information Outlook	U.S.A.	1	1.10	169.49
155	26	The Serials Librarian	U.S.A.	1	1.10	170.59
156	26	Journal of Medical Practice Management	U.S.A.	1	1.10	171.69
157	26	Journal of Business Management	Nigeria	1	1.10	172.79
158	26	Drexel Library Quarterly	U.S.A.	1	1.10	173.89
159	26	Psychological Review	U.S.A.	1	1.10	174.99
160	26	Journal of Medicine Education	U.S.A.	1	1.10	176.09
161	26	Granthana	India	1	1.10	177.19
		Total		**930**	**177.19 ~100**	

FIG. NO. 6: RANKING OF PERIODICALS BY FREQUENCY OF CITATIONS (TOP 6)



Chapter-6

Findings and Conclusion

CHAPTER-6

FINDINGS AND CONCLUSION

The major findings and conclusion of the study are as discussed below:

1. The students in the field of library and information science are consulting journals which have the highest number of citation, accounting, for 66.53% of the total, e-resources are the second higher group (15.93%) followed by book, Bulletins, Magazines, Dictionaries, Conference proceedings, Encyclopedias, Reports and project.
2. The most cited journal is the Annals of Library and Information Studies with the highest citation 78(8.38%), the second highest cited journal is The Electronic Library with the citations 60(6.45%) and the least cited journal is Granthana with the least citations 1(1.10%).
3. The maximum number of papers is published during the years 2001-2010 i.e. 665(67.71) papers.
4. Most productive country is U.S.A. which has the highest number of citations, followed by U.K., India and Netherlands respectively.
5. Majority of the papers published in periodicals is by single authors, i.e. 522(50.77%), followed by a team of two authors, i.e.359(34.92%), followed by a team of three authors,

i.e.100(9.72%) and followed by a team of more than three authors, i.e.47(4.57%) respectively.

6. A rank list of cited authors indicates that the maximum articles were contributed by B.S. Biradar, followed by 138 authors who have occurred more than once and rest 157 authors occur only once.

CONCLUSION

Citation analysis is a tool of bibliometric study of literature based upon some degrees of relationship between citing and cited document. It is an analysis of documents, journals author publication, year etc., which is used by citing author. It is established relationship citing and cited articles and documents. Today, citation analysis is prepared list of frequency of citation and gives more emphasis on the subscription of journals and documents. To conclude this research, the citation analysis of MLIS dissertation follows the norms of other citation analysis research that has been done in other fields. It was found that journals were the most widely used materials to be cited by dissertation authors, and single authors dominate the authorship pattern. Thus these relevant information shows the similarity of this research to other research. Finally, the results can be used as a tool for the collection management of the library as well as a tool for the collection development.

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